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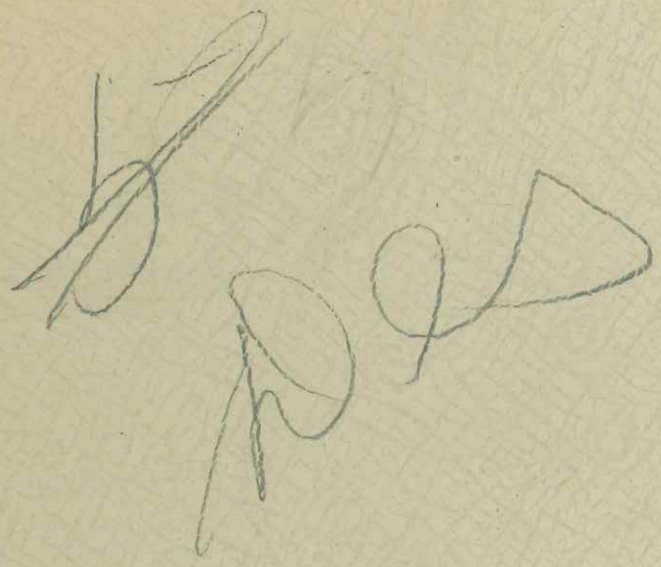

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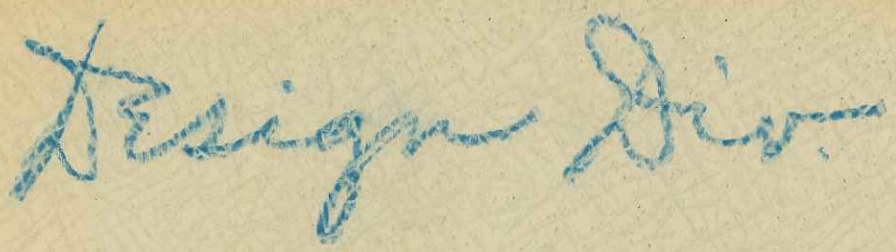

PACKAGING CATALOG

Practical Information on Packaging

Catalogs of

Machinery, Equipment and Supplies Used in Packaging Industries

Complete Buyer's Guide

1930 Edition

Price $5.00 per copy

PUBLISHED BY
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PUBLISHERS ALSO OF MODERN PACKAGING AND MODERN BOXMAKING

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Foreword

THE initial edition of the PACKAGING CATALOG which appeared last year established what is believed to be the first attempt to group comprehensively in one book a service that meets the requirements of manufacturers and others who wish to obtain the advantages that are generally and specifically credited to the use of the package in present-day manufacturing and merchandising practices. As stated in that edition, in the preparation of such a book each step of design and production in package making should properly be considered as a separate subject and, likewise, its relation to subsequent operations must be taken into account. It is also essential to such a service that, in addition to the outlining of methods and practices, the user of packages be supplied with complete information pertaining to such equipment and supplies as are necessary for the successful and economical production of the package.

It is believed that the convenient arrangement of the contents of the book, together with the plan of indexing, are such as to appeal to executives and others who concern themselves with any phase of packaging work and package design. Although designated as a catalog, the volume partakes of the nature of a hand-book, and it is believed that this treatment will be highly acceptable. Much of the editorial data and descriptive information has appeared previously in MODERN PACKAGING and is presented in abstract form; several of the articles have been especially prepared in order to give the reader as complete a treatise on the subject as is possible in a reference book of this kind.

Acknowledgments are due to several authors who have contributed the articles included in the editorial sections of the book and to the manufacturers who have supplied data and information relating to their specific products.

In this second edition the several articles which appeared in the first edition have been rewritten or otherwise brought up to date, new data and material have been added and every care has been taken to make the book as complete in detail as possible, thereby rendering a service that will enable users of packages to plan intelligently, economically and in accordance with best practices.

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The Size and Shape of a Package

THE correct size and shape of a package for any given commodity depends primarily on the character of the product and the conditions under which it is sold. Generally speaking, however, the rules governing the selection of the proper form for packaging any product may be grouped as follows:

A. Attractive appearance.
B. Protection of contents.
   a. During shipping.
   b. While on display.
   c. While in use.
C. Advertising value.
   a. Suggesting character of the product.
   b. Carrying the trade name, message and name of manufacturer.
   c. Suitability for use in the various types of advertising.
D. Economy.
   a. In materials used.
   b. Time element of production.
   c. Shipping and selling costs.

It would be impossible to cover all the branches of the packaging industry in an article of this length and for that reason we have chosen for the purpose of illustration, two classifications—food products and toiletries. These two branches present an opportunity to demonstrate two entirely different sides of the question.

All package values depend upon the physiological laws governing sight. As the appeal of the package itself must be directed primarily to the eye a working knowledge of these laws is essential to the creator of packages. Although it is unnecessary for the manufacturer himself to delve into the fundamental laws governing visual perception, he should be in a position to determine whether or not the artist he employs is familiar with these laws and their relation to the sales value of a package.

SIMPLY defined, sight is merely the action of light and color rays upon the visual field of the eye, combined with the nervous excitation of memory centers located in the brain, caused by these stimuli. Therefore, the most attractive package form is one that causes a pleasant visual sensation and stirs into instant activity one of the memory groups. The habits of association acquired over a period of time are a large factor in determining the most effective package form.

Certain color tones have, because of the velocity of their light waves, the ability to command instant attention. Orange and red packages on a shelf filled with packages in other colors will be seen first because of the fact that they are saturate colors possessing a high velocity. Frequently the color employed in the design of the package is instrumental in creating an impression of size. Tests have demonstrated that packages presenting a large surface in white, yellow, orange or red appear much larger than those presenting the same area of space in blue, purple or black.

In packaging food products and many other kindred lines it is frequently desirable to select a package form that will give the appearance of being larger in size than it really is. In the choice of a package form for an expensive perfume the reverse is frequently employed to suggest the exclusiveness and rare quality of the product.

JUDGMENT of relative sizes and shapes is the result of both sensory and intellectual activities plus the knowledge gained by actual experience in the comparison of objects within the field of vision at the same moment. At one time the ability to judge relative values of forms was considered by scientists to be inborn, but the results of later physiological tests have demonstrated that this mental attribute is gained only by visual experience. Children and morons are easily confused but as the intellectual growth increases with age or observation the ability to judge relative sizes and shapes becomes more acute. However, certain results of the actual movement of the eye itself during the process of perception frequently result in errors of judgment.

Although the weight of the contents of a package, particularly in food products, is regulated by laws and custom some packages appear, because of their shape and apparent size, larger than others. The use of a package which appears larger than it actually is cannot be interpreted as an attempt by the manufacturer to defraud the buying public. It is, rather, an appeal to the bargain-hunting instinct inherent in all those engaged in any type of commercial activities. As the psycho-analysts designate it, the instinct of self-preservation, considered by them the strongest of all human instincts.

Because of the anatomical construction of the eye, observation of an object from side to side is more easily accomplished than from top to bottom. It is for this reason that short, broad packages and containers present a greater appeal than those of the tall, narrow variety. As there is a tendency in visual perception to follow beyond the outline of an object, a round container which presents no eye-arresting edge will appear larger than a square one, although the contents and actual area may be the same. It is possible, however, to include in the design of the package lines or arrangement of lettering that will produce the same effect, even though employed on a square container.

SOLID black or dark colors employed in the package design have a tendency to decrease the illusion of size because they reduce the velocity of light and color waves.

While it may appear that we have gone far afield in this discussion of optical illusions in packaging, a knowledge of these idiosyncrasies of visual perception is of great importance in designing a package. Application of these fundamental laws will result in the added attractiveness and salability of the package and they are of

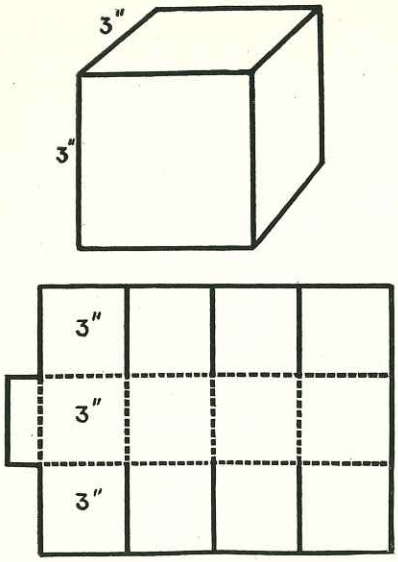


Fig. 1 Box size 27 cu. in. requires 108 sq. in. of boxboard

paramount importance in deciding the proper size and shape to be employed. Armed with this knowledge the creator of a package design will be able to produce through his selection of color, form and size the illusions the manufacturer desires.

The first function of packages in the earlier history of this industry was protection of the product. More recently packages have become recognized as an important aid in merchandising and are being called upon to advertise and sell the product. In the main, however, in all branches of manufacturing the primary purpose of the package is protection.

Manufacturing centers are in many cases far removed from the point where the merchandise is sold and shipping problems enter into the selection of the proper package form. The size and shape of a protective container depends to a large extent on the character of the product to be packaged. Economy in shipping depends upon the selection of package forms that can be safely shipped over long distances without damage to the product and without loss through wasted shipping space. Packages in odd or irregular forms require special shipping cases and a great amount of shipping space is wasted, whereas it is possible to transport a large number of packages in the same space by the selection of simple forms. Shipping cases of standard sizes will hold many more packages in square and oblong shapes than oval, round and irregular forms.

UNDER existing retailing conditions the shelf space in the average grocery or chain store is limited, and for this reason the package form selected for food products must be one that can be easily stacked. Irregular shapes, particularly when the tops of containers are pointed or gabled, present a serious storage problem when shelf space is limited. A few of these difficult package forms have been successfully merchandised but the majority of them are unsuitable for food products. Toiletries, particularly in the grades retailing at high prices, are usually accorded more display space and these products, because of their high retail cost and subsequent profit to the retailer, may be packaged in containers in odd and irregular shapes. In this instance it is frequently the novelty of the container that attracts attention and sells the product. Naturally the rules governing the selection of package forms for food products also apply to toiletries, retailing at little profit to the retailer because these items are usually sold in large quantities and a plentiful supply must be stocked.

CONDITIONS surrounding the use of the package also influences the selection of the package form. Shelf space and use by the customer under known conditions must be considered. Bottles containing face lotions and other toiletries must be of a shape convenient to hold in the hand as well as store in medicine chests and shelves.

Products which remain during use in their original container require a different form than those that are emptied immediately. Packages for spices and similar food products which are usually used directly from the container must be of a shape convenient to handle and of a size to store conveniently on kitchen shelves.

Jars in which salves or cold creams are merchandised must be of a size and shape which will easily permit the purchaser to use all of the product Bottles containing olives and pickles must be constructed so that the contents may be removed without difficulty. Liquid products must be packaged in bottles from which they may be easily poured without the possibility of spilling.

All these conditions determine the size and shape of a package used to protect its contents during use and must be considered in selecting the proper package form for the particular type of product to be packaged.

FREQUENTLY the selection of the proper package form is determined by its possible advertising value. Before the final decision is reached it is wise to consider the channels through which the product is to be advertised. As the different types of publicity demand different treatment of package forms, they may be separated into the following classifications:

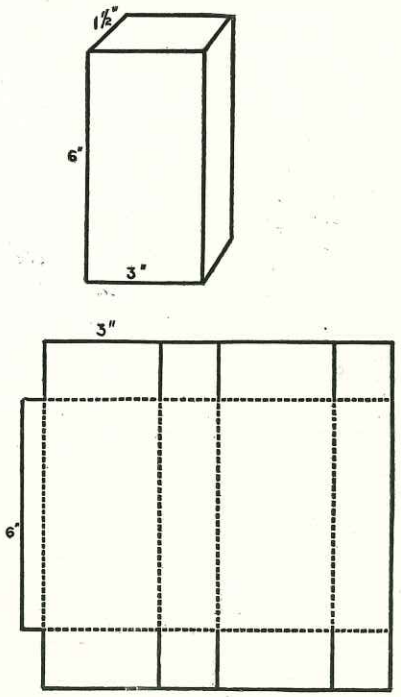


Fig. 2 Box size 27 cu. in. requires only 81 sq. in. of boxboard when this shape is used

A. Advertising in newspapers.

B. Advertising in periodicals.

a. Black and white.

b. Color.

C. Outdoor advertising.

a. Bill boards.

b. Car cards.

c. Dealer displays.

D. Sampling.

A product which has been, or is to be, widely advertised through newspaper publicity does not require a package form large enough to carry an extensive advertising message if the advertising

campaign is to be a continuous one. There is little need of cluttering the package itself with lengthy sales messages if sufficient advertising is done to familiarize the buying public with the uses and merits of the product. In this case the package need only function as a link in the merchandising chain and the printed matter on the package itself may be limited to the trade name, the name of the manufacturer and, occasionally, the sales slogan or other catch-phrase used in advertisements.

It is a well-known physiological fact that the normal span of attention is both limited and selective, therefore the most effective package form is one that provides an opportunity for sharp contrasts either on the package itself or with the backgrounds to be used in display, and presents a compact, poster-like, identifying feature. As it is usually impossible to govern conditions surrounding the display of the package itself, it is wiser to concentrate on the package rather than to depend upon the display for contrast.

IF the package is to be featured extensively in newspaper advertisng the form chosen must be adaptable to reproduction in black and white. Limited advertising space frequently necessitates sharp reduction in the size of the package and for this reason the design and lettering used must be sufficiently strong in intensity and legibility to reduce to the required size without sacrificing its sales value.

It is an accepted fact that reproductions of the package in colored advertisements are of great assistance in fixing the package in the minds of the buying public. The number of manufacturers employing this method is increasing and their reports on the steady growth of sales volume attributable to this practice is a strong argument in its favor. If the package is to be included in colored advertisements the package form chosen must be suitable for reproduction in that medium. The balance in advertising layouts is a factor worthy of greater consideration than is usually accorded in the selection of a package form. Possible artistic effects in relation to backgrounds and advertising copy must also be considered.

In this form of advertising the effect to be gained by the use of color in the package design is most important. White, red, yellow and orange packages give an impression of size but in many instances these colors complicate the advertising layout. Simple color effects and limitation of the colors used will greatly reduce the cost of color advertising. Each added color to a package design not only adds to the cost of reproduction but detracts from the effectiveness of the package.

THE question of the amount of advertising material to be included in the package design is also a determining factor in the selection of a package form. In many cases it is wiser to include a package insert in the package than to include directions and other printed material on the package itself. The additional cost of this method is more than compensated by the additional sales value of the package.

If, however, recipes, directions or other printed matter are desired on the package itself it is frequently advisable to choose a square or rectangular package form. Either of these shapes present a large, unbroken surface for the display of the trade name and three surfaces which may be used for the directions and other printed material. These shapes also possess the advantage of commanding sufficient surface on display shelves.

If the character of the product requires a round container it is usually wiser to isolate the sales messages in panels on the back or sides of the container. This allows a large, unbroken surface for the display of the trade name or other identifying feature which may be used merely to identify the product, allowing a wide space for contrast of color or shape to instantly establish the identity of the product.

OUTDOOR advertising of the package itself necessitates the same consideration of size and shape required by other color advertisements. In this instance, however, the more poster-like in appearance the package form is, the better. This form of advertising, appearing as it does to the public in motion, depends for its advertising value on flash messages. For this reason the more simple package forms are more readily remembered, and if the package chosen is to be displayed in this type of advertising an easily remembered package form developed in simple cover effects will produce the best results.

The possibility of dealer displays must also be considered in selecting a package form. The type of store in which the product will be sold determines to a large extent the shape and size of a package. Naturally a food product to be sold in crowded chain stores where display space is limited requires a more simple form than a perfume to be sold in exclusive shops. Gabled tops and irregular forms so complicate the problems of the already overburdened store manager that they are usually relegated to obscure corners, whereas the package in rectangular, square or round form will be granted sufficient shelf or window space to insure its full advertising value.

PRODUCTS of which sample packages are to be distributed should be packaged in a package form adaptable to reduction. This fact is most frequently forgotten and the sample is distributed in a package entirely different from that used to merchandise the product.

Many manufacturers of food products, particularly breakfast foods sold in individual containers for use in lunch rooms and cafeterias, have demonstrated the advisability of using a miniature of the regular size package to merchandise the sample sizes. It is certainly logical to suppose that the person who is served an individual package of breakfast food in a restaurant will remember the package when it is seen in a larger size on the shelves of their own dealer.

The actual cost of the package itself must also be considered in selecting a package form. This, of course, depends to a large extent on the retail price of the product.

Food products that are sold at a small margin of profit must naturally be sold in containers that can be produced at a small cost.

TESTS have demonstrated that in many instances savings in container costs could be effected by a slight change in the shape of the package. As demonstrated in Figs. 1 and 2 the change in the shape effected a startling economy in the quantity of box board used in the package although the cubic contents remained the same. At the same time the new container because of its shape commanded more display space on the dealer's shelf and consequently secured better advertising for the product.

The same principle applies to cans and paper boxes. In the first instance it has been demonstrated that the simpler forms require less material and consequently cost less. While it is true that in the case of toilet articles retailing at a high margin of profit odd and irregular-shaped package forms frequently result in a larger volume of sales, it is nevertheless true that in products retailing at a low or medium profit the cost of the container is an important consideration. In addition to the savings effected in box board by the selection of simple forms there is also the saving in box papers and labor. In most instances paper-covered boxes are finished by hand and the labor involved in covering a many-sided box is much greater than that employed in covering a simple form.

The proper size and shape of a package for any specific product depends upon the nature of the product, the conditions under which it is merchandised and the results expected from the package. A consideration of these established principles will result in better packages from the standpoint of the manufacturer, the retailer and the purchaser.

Copyrighting Package Features

By WALDON FAWCETT

THE more extensive and the more conspicuous becomes the use of the package as an instrument of merchandising, the more valuable grows the business good-will bound up in the familiar and recognizable package. When the consuming public comes to specify-by-package in buying and to verify the origin or identity of purchases by package appearance, the packer is justified in regarding the "personality" of his package as his most precious intangible asset. Given this appraisal, it follows that the established package design needs protection and insurance.

Due to sheer multiplication of varieties of packages, no less than to the sharpening of competition in all lines of packaged goods, there is ever-increasing need for safeguards against package imitation and infringement. More to the point, it is highly desirable that the protection shall be preventive rather than remedial. So large has become the field of packages and so rapidly come the additions, that no business executive can hope to keep tab on all newcomers as they arrive. Thus it is entirely possible for a simulative or duplicating package to gain considerable distribution ere the pioneer user of the type of package is even aware of the presence of the "double."

In this alarm that reminiscent packages are crowding and overlapping one another, it is only fair to say that much of the duplication or near-duplication is unconscious or unintentional. This innocence of malice does not, however, prevent or cure the confusion in trade which is so apt to result from double-tracking of package design. The originator of a package pattern needs protection no less from after-sharers of the same inspiration than from the most conscienceless pirate. To deal with the latter the package creator needs authoritative recognition of property rights that will put the poacher to rout if, indeed, it does not deter him from trespassing at all. To persuade the unwitting interloper to withdraw, the prior packager at least requires conclusive proof that he was first to adopt and use the coveted package dress.

Protection for packages, that looks to the future as well as the present, needs to be national or country-wide in scope. Even if a packager is, for the time being, confining his operations to a single state or, perhaps, to one locality, he cannot say when or how rapidly he may wish to extend his distribution. Or, even if he foresees no large destiny for his own enterprise, he might find it uncomfortable were package twins, originating afar off, to come to the very borders of his walled market. And they could approach that close before the common law of unfair competition would stop them.

SEVERAL forms of actual and anticipatory protection for package features are obtainable, for long periods and at nominal cost, from the Federal Government. All business men know these legal shelters by name. "Copyrights," "trade marks," and "patents" are the terms expressive of the several agencies to a common end. But, despite the familiarity with the designations, a large proportion of the packaging industry has actually a vague and hazy idea of the nature and functions of these mediums of protection. In some instances the terms above mentioned are used interchangeably. To make matters worse, they are mixed up indiscriminately with such terms as "brands," "labels," "trade names," etc.

The trouble arises from a loose use of the titles of the various protective forms. Very often this produces a paradox. The layman talks about "copyrighting his

trade mark" when, literally, such a thing is not possible. Or, again, the unsophisticated is persuaded that because labels and advertising prints relating to articles of manufacture are entered or enrolled at the U. S. Patent Office it is the proper usage to refer to them as "patented." The mix-ups come about the more readily because the various states of the Union have their own facilities for issuing credentials to industrial property used in intrastate commerce within their borders. State administrators take liberties with the terms that have the most definite meanings at Washington.

ONE branch of Uncle Sam's copyright service is devoted to subject matter that is more or less within the range of the fine arts. This class of copyrights are "entered" at the Copyright Office, a branch of the Library of Congress. Thus, if a producer or distributor wants to fence off the picture that adorns an art package or gift package, he applies to the Registrar of Copyrights. Meanwhile, equivalent protection has been provided in another quarter for the copyrightable subjects that might be designated as more useful than ornamental.

At the Trade Mark Division of the U. S. Patent Office, which latter is, in turn, a branch of the Department of Commerce, there is a copyright annex which receives copyrightable prints and labels that are designed for use on or in connection with articles of manufacture. It is through this channel that packagers must seek copyright protection for most of their package features. For the outer "dress" of a package, even unto a complete wrapper or the carton blank in its entirety, is usually rated as a "label," provided it bears reading matter or pictures that "describe" the package contents, as required by the law and the regulations. In some respects this copyright at the Patent Office is liberal and elastic in its requirements. But it is a mistake to assume that there is waived entirely the artistic requirement that is so conspicuous in the case of general copyright. It is no easier to obtain entry at the Patent Office than at the Library of Congress for a package lay-out that is merely an example of the typesetter's skill, instead of the product of a designer.

The muddle in some minds perturbed over package protection is made the worse by the fact that many folks, including some officials, speak of "registering" labels when they mean copyrighting at the U. S. Patent Office. Strictly speaking, it is only trade marks that are registered. And a technical trade mark is required by law to be the opposite of a copyrightable label in that it must identify an article without describing it, whereas the label must describe the article to which it is attached. Given this sharp distinction, it follows that a registrable trade mark, standing by itself, cannot be copyrighted as a label, even if it be the only inscription on the outside of a package. But it is entirely possible to copyright a label in which a trade mark is one of several features.

The "print" angle of the copyright structure has little significance for those who think only in narrow terms of package protection. But it does offer an entrenchment to packers who desire protection for car cards that reproduce the package and for cut-outs, dealer-helps, counter and window displays that glorify the package. To obtain copyright as a "print" or an "advertising print," the piece of printed matter must describe the goods but be intended for use in connection with the merchandise rather than for use on the goods as is a label.

TO obtain, at one swoop, complete, all-embracing protection for a package covering its characteristics of size, shape, outline, decoration, color scheme and closure is virtually impossible. The copyright route comes nearer to it, however, than trade mark registration. It is absolutely impossible to secure at Washington a certificate which recognized a container as a trade mark for its contents. No better is the chance of basing a trade mark franchise on the color of a package. If a package is adorned with a red circle, a green cross or a purple crescent, the particular design in color will be allotted to a first user. But it is hopeless to aspire to fence off a color as such, no matter whether the color envelops an entire package or is confined to some structural feature, such as a flap or a cap.

Copyright comes nearer to the ideal of consolidated protection for the package. Even here limitations are encountered. The form, outline, and even the surface ornamentation of a container, if fresh, original, and the fruit of inventive skill, may require a design patent as one line of defense. But the copyright administrators will accept as a "label" the essence of the package set-up. The package wrap in its entirety, and the carton blank, complete, have been put under blanket copyright.

The alternative policy in package protection is that which seeks to fortify the package by invoking separate safeguards on as many different elements or features of the package get-up as will support individual grants of monopoly. A resourceful packager may have, to begin with, several underlying trade mark registrations. Say, one on the brand name, another on a symbol or device, and a third on a slogan. There is no objection to the use of two or more trade marks on the same package. In like fashion, details of the package ensemble may be copyrighted as labels, provided these units of the design are severally artistic and describe the goods.

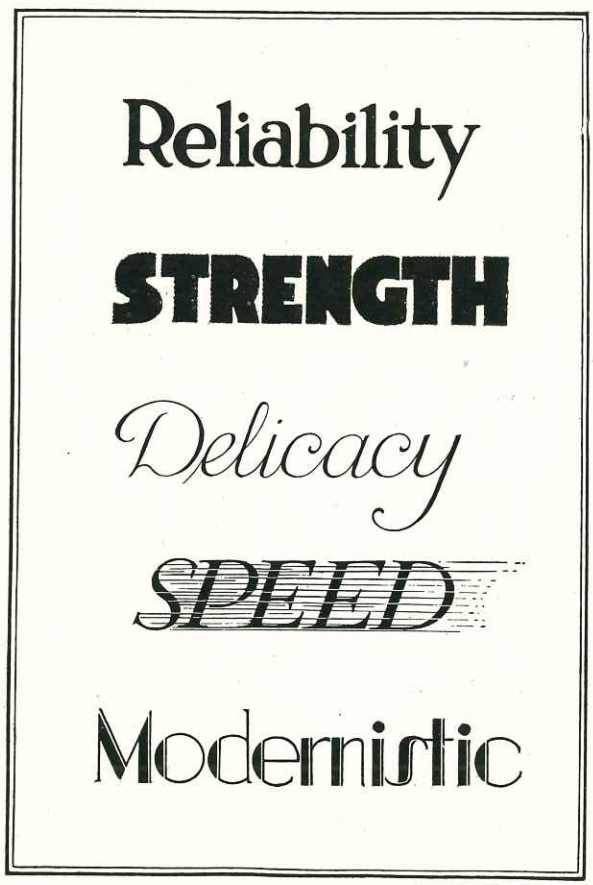
How multiple features buttress the package is indicated in the case of Colgate's Tooth Paste, which has four copyrighted labels on one box. National Biscuit Co. mounts on each of its best sellers a battery of package plasters, each duly protected, that collectively deliver a formidable broadside of identification. Pinaud's Eau de Quinine carries, on each bottle, six different labels, several bearing an autograph signature so that imitation would constitute forgery as well as infringement. Several of the firms that have thus pyramided the separate features of the package assembly report that attempts at imitation have been fewer since the reinforcement. At the expiration of a copyright term the copyright may, by payment of $6, be renewed for a further period of twenty-eight years, so that long protection is available for the package designed to be permanent.

Lettering a Package

MORE than one otherwise effective package has been rendered ineffectual by the choice of the wrong type-face or style of lettering incorporated in the design. This is surprising, too, in view of the tremendous expense involved in the creation of a new package design and the recognized value of a package that suggests certain characteristics of the contained product. Frequently this error is caused by ignorance, both on the part of the artist who designs the package and the manufacturer who accepts the design, of the psychological possibilities of the various styles of lettering or forms of type-face that are offered.

Legibility is of primary importance in the selection of style of lettering to be used on a package. Present-day merchandising conditions automatically place a great proportion of the responsibility for the sale on the package itself and the name of the product must be readable for the distance between the dealers' shelves or counters and the eye of the prospective purchaser. Then, too, the use in display must be considered. A package to be retailed from shelves in chain-store grocery or drug shops necessitates a larger, more poster-like style of lettering than one to be displayed in the intimate surroundings of a beauty shop. All conditions surrounding a package in display or in advertising, if it is to be featured in that form of publicity, must of necessity be taken into account.

Experiments have proved that single letters are legible at a greater distance than those in groups; therefore, as the length of the trade name increases the legibility decreases. The handicap of necessary grouping of letters into words may be partly overcome by providing good spacing between the individual letters of the word used on the package.



SEPARATION of the letters composing a trade name or other reading matter on a package may also be accomplished by the use of a heavy type-face in a dark color, outlined by a thin line in a bright color and superimposed upon a background in a light or neutral shade. This method creates a poster-like effect and results in unusual legibility of the lettering employed.

If more than one line of lettering is to be used the spacing between the lines is of great importance. Two or more lines, separated by wide spacing, will retain the legibility of a single line but as the space between the lines is narrowed the legibility decreases in proportion.

Tests in psychological reactions have demonstrated that pleasant sensations are remembered for a greater length of time than those of an unpleasant nature. Unconsciously the customer is resentful of the necessity of straining to read the lettering on a package and that fact is likely to cause the association of that package with an unpleasant sensation. This frequently results in the choice of a competitor's product contained in a package that creates a more favorable reaction because of the legibility of its lettering.

In standardized type-faces it has been demonstrated that the bold face type possesses the greatest legibility with the wide form next in order and narrow italics ranking last. This is also true of hand lettering patterned after these forms. In many instances legibility is sacrificed in hand lettering in order to produce a novel effect. This method may be employed with safety only when the package is to be viewed at close range. The use of this method is contra-indicated for all packages to be displayed on dealers' shelves unless the novelty of the package design itself is unusual enough to identify the product without the use of a trade name.

FAMILIARITY with the appearance of a word in a certain type form or lettering style is also of importance. Reading habits have been established through years of reading print set in capitals and lower case. The reading eye is familiar with words in this form and not with words printed entirely in capitals. Then, too, cues are given by the broken line above and below presented by rows of letters in lower case.

Through association certain forms of lettering have become identified with the different types of merchandise. Even lettering that is non-interpretive of the product itself will eventually come to suggest it because of long association. In a like manner certain forms of lettering have been used on other products whose qualities are of a different grade than that for which a style of lettering is to be selected. It is unwise to use a type-face

on a package for an expensive perfume if that particular lettering has become familiar through association with a cheap product, but if a suggestion of quality is desired a type-face long associated with an expensive product is often times used on a package containing an inexpensive product with resulting advantages.

SUITABILITY of the style of lettering to the product to be packaged is also an important factor. Piston rings, hardware or automobile accessories require an entirely different type-face than perfumes, soaps or stationery. With the many varieties of standard type-faces and the ingenuity of the modern artist in developing individual forms of hand lettering, it is possible to select a type of lettering suitable for any given product. Association of this form of lettering with the product will eventually prove of great sales value because of the known principles of association of ideas. Continued use of a certain form of type over a long period of time has proved to be of inestimable value to manufacturers of well-established products. Once a suitable form has been selected it becomes an integral part of the package.

Frequently it is possible to suggest not only the quality of the product but other characteristics by the proper selection of lettering. The accompanying illustration demonstrates a few of the possibilities. The type used in the word "Reliability" is suitable for a product, the main characteristic of which is dependability. That used in the word "Strength" is suitable for such products as ropes, hardware, automobile accessories, etc. "Delicacy" is applicable to those products designed for feminine use. Even the suggestion of speed or motion may be made by the use of an unusual form of hand lettering as in the word "Speed."

Throughout the entire range of possible characteristics of any given product there is some form of type-face or hand lettering that will suggest the merchandise contained in the package. With the advent of the modern trend in packages new forms of type faces and new styles of hand lettering are being developed to suggest the newness of the product itself or the style in which it is developed as in the word "Modernistic" in the illustration shown.

SUMMARIZING, the correct form of lettering for any package is one that possesses high legibility under the conditions surrounding the display of the package; it must be suitable for the type of merchandise packaged and possess the suggestion of one or more of the dominant characteristics of the product. In addition, it must conform to recognized rules governing the theory of association of ideas. Only by careful consideration of all these factors is it possible to select a type-face or style of lettering that will aid in establishing the identity of the product and become an integral part of the package itself.

The Psychology of Color

By CHARLES E. VAUTRAIN

THE selection of the proper color depends upon the specific case. Therefore, a knowledge of colors, their symbolism, characteristic mood and influence will help one to select a color or combination of colors for a package appropriate to the product or for attention value.

Red is a brilliant color which symbolizes fire, heat, passion, blood, danger; but it can also be aggressive and irritating when used incorrectly. It has great power and versatility, but its extravagant use has made it become very common. Use red only when its appropriateness can be utilized. Otherwise select some other color that offers more contrast or novelty. *Green* typifies coolness, life, restfulness and cheer. Its use in harmonious color schemes wears well. When it approaches blue it is cold and retiring but when it draws on yellow it becomes warm and advancing. When one studies the great scale of greens as seen in a landscape lighted up with full sunshine through the leaves, and the rich dark green in the shadows, it seems as if no other color would admit more restfulness to the eye.

Blue symbolizes truth, consistency and justice. It is a cold color, and a retiring one. Its suitability as a background is best exemplified by looking at a blue sky against which the landscape stands out with vividness. It loses brilliance, however, under artificial light and it is safer to use a medium tint. Blue used unwisely is discordant and entirely unrelated to other colors.

Purple is a color that royalty has worn since time immemorial. It is also a color of mystery because it can be hot or cold, life-giving or quietly dignified. Its stateliness is at all times beyond compare, but can seldom be used successfully for commercial purposes.

Yellow, the light-giving color, signifies life, light, cheer and happiness, but used incorrectly or in too large quantities, it is blinding and oppressive. In its highest purity, it always carries with it the nature of brightness, and has a serene, gay, softly exciting character. It excites a warm and agreeable impression and is very attractive when used with its complement—purple-blue as a background.

The Correlation Chart of Color Interpretation shown on the page following this article was evolved after several years of study and research.

To facilitate its use, the color meanings were arranged according to symbolism, characteristic, mood reaction, influence and temperature of color. This method offers a ready reference to those interested in obtaining the correct psychological meaning of color. The numbers printed before each word denote the intensity of the color—1 represents extremely light hues, 2 medium hues and 3 the dark hues.

Correlation Chart of Color Interpretation

1. Light Values *2. Medium Values* *3. Dark Values*

HUES	SYMBOLISM	CHARACTERISTIC	MOOD	Influence	Temperature
Red-purple	2 Battle 3 Heroic Virtues 2 Valor 3 Prowess	2 Stateliness 2 Impressiveness 2 Haughtiness	3 Cold 3 Chilly 2 Tragic	SUBDUING COLORS	COOL COLORS
Purple	3 Loyalty 2 Patience 2 Fidelity 3 Allegiance	3 Dignity 3 Royalty 3 Seriousness 3 Imperialness	3 Dark 3 Ceremonious 3 Cold, Grave 3 Austere 3 Pompous		
Purple-blue	3 Solemnity 3 Majesty 2 Reverence 2 Sublimity	3 Apathy 3 Harshness	3 Stern 3 Unyielding 3 Cold		
Blue	3 Truth 3 Consistency 3 Justice 2 Sincerity	2 Tranquility 2 Calmness 1 Expansiveness	2 Passive 3 Cold 3 Deep		
Blue-green	2 Peacefulness 2 Serenity 3 Placidity	2 Retiredness 3 Unexpressiveness	2 Sedate 3 Sober 3 Cold	TRANQUILIZING COLORS	
Green	2 Fruitfulness 2 Hope 2 Immortality 2 Prolification	2 Youth 2 Vigor 2 Life 2 Appeal	2 Cool-Passive 1 Refreshing 2 Restful 3 Quiet-Retiring		WARM COLORS
Green-yellow	2 Encouragement 1 Happiness 2 Success 1 Prosperity	1 Cheerfulness 1 Refreshfulness 1 Vivacity 1 Alacrity	2 Springlike 1 Gentle 2 Stimulating 2 Flush or Warm		
Yellow	1 Supreme Wisdom 1 Goodness 1 Inspiration 1 Prudence	1 Joyfulness 1 Gaiety 1 Merriment 3 Sickness	1 Warm 1 Light 1 Joyous 1 Active 1 Stimulating	EXCITING COLORS	
Yellow-red	1 Knowledge 2 Benevolence 2 Home 1 Light 2 Benignity	1 Liveliness 1 Warmth 2 Gravity 3 Somberness 3 Strength	1 Mellow 1 Warm 2 Rich 2 Luscious		
Red	2 Love 2 Valor 2 Passion 2 Truth	2 Danger 2 Sanguinity 2 Fire 2 Anger	2 Intense 2 Fierce 2 Hot 2 Vital 2 Active 2 Exciting		
White-silver	Chastity Innocence Purity	Peace Modesty Reservedness	Dignified Clean Chaste		
Gray	Tribulation Humility Distress	Quietness Subduedness Repressiveness	Calm Serene Mild		
Black	Death Mortality	Gloom Darkness	Mournful Sad		
Gold	Richness Glamour Enchantment	Money Gold Glory	Glorious Powerful Distinctive		

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The Package in Car Card Advertising

IT is acknowledged that the primary requisite of any form of advertising is that it must sell the merchandise advertised. Effectual advertising does more than that—it sells not only the single product advertised but "fixes" the name of the manufacturer or the identity of the product firmly in the mind of the consumer. In deciding whether or not to employ a reproduction of the package in advertising it is wise to consider the well-established laws of advertising psychology.

Memory plays an important part in all forms of advertising. The methods whereby the retention of an idea in the memory of the consumer may be assured are many. This object is frequently accomplished by the use of color combinations which are used with such regularity and frequency that the mere presentation of the color scheme will suggest the product. Another method is by use of a distinctive type-face. This type-face may be used in all advertisements over a long period of time and with frequent repetitions until the appearance of copy in this type will recall the balance of the advertisement. Again, the trade mark or label may be used in all advertisements. Where this feature plays an important part in the design of the container this method can be used to good advantage. However, the most effective medium that can be used in the advertising of any product sold in cans, packages or containers is a facsimile of the container itself. From the beginning of primitive civilization up to and including the present age no better way of telling a story or insuring a lasting impression has been found than through the use of pictures or pictorial representations of forms and objects. It is a well-known fact that the form of an object will be remembered long after its color or other characteristics are forgotten. If a manufacturer has spent time, money and careful consideration on the selection of the package there is no better way of familiarizing the consumer with the product than through the use of the package in all his advertising.

Consider only the use of the package in car card advertising. The position of the car card in relation to the eye of the observer is a particularly happy one. Advertisements in papers and periodicals may not be read at all or glossed over hurriedly, posters on bill boards are frequently passed by rapidly unless the tremendous size of the lettering or the brightness of the colors employed succeeds in arresting and holding attention and circulars distributed through the mails or through other channels are frequently disposed of unread. In the case of the car card the fact must be realized that the eye of the traveling public is a restless one, a fact which can be easily proved by watching the eyes of the average passenger in a street car. A small percentage carry their own reading-matter but the majority, either sitting or standing, are facing the car cards for a certain period of time.

An additional argument in favor of employing the package in car card advertising is the problem of reaching the illiterate portion of the population. This term is used not only to designate those unable to read but also those unable to read English. United States Army tests in 1917 proved that thirty per cent of those examined for enlistment were illiterate in that sense. If the advertiser is to reach this market he must employ a representation of the product or the package in which it is sold.

Having decided to use the package in the advertisement the question arises as to how to display it. It is an accepted theory that objects displayed in the same space are remembered together. Every advertiser hopes by long campaigns of advertising to associate his product in the mind of the consumer with the need or desire for a certain product. Beyond that he hopes to so identify the product that there will be no possible confusion with a similar product advertised by another company. By depicting the use of a product or the occasion when it is needed and a facsimile of the package containing the product together, the manufacturer may be reasonably sure that the two ideas will be remembered together.

Series of tests have proved that pleasant ideas, associations and experiences are remembered longer than unpleasant ones. The appeal in advertising must follow this principle. Not only must the product be advertised in a pleasant manner, i. e., by the use of artistic color effects, but it must also be associated with some pleasant reaction—cleanliness, beauty, satisfaction of appetite or some other pleasant sensation. If it is possible to tie up a picture of the package with a representation of a pleasant experience, the product will stand better chances of being remembered when this particular desire occurs.

Another factor in the position of the package in reference to the balance of the advertisement. Experiments have proved that objects are observed from left to right and from above downward. Therefore, if the package is placed on the right-hand side of the space it will be reached after the copy or other matter and associated with it. If this is impractical, for any reason, the second best position is below the most arresting color effect.

While this is merely a brief summary of the reasons for employing the package in car card advertising, it is hoped that it will aid in increasing the number of advertisements that result in more lasting benefit to the manufacturer through the skillful use of the package in combination with good color effects and well-devised copy. Incorporating a reproduction of the package in a piece of advertising, as a most effective means of keeping the product continually before the public, has long been accepted by the advertiser. This is truer of the use of the package in car card "copy" than in other forms of advertising because of the effectiveness of that type of publicity which must depend on instantaneous impressions created in the mind of the traveler.

Packages in Window Displays

THERE is no need to prove a case for window and counter displays. The fact that the annual expenditures made by retailers and manufacturers for display material totals $100,000,000 should be considered sufficient evidence to show the importance of this form of sales stimulation and appeal. The general functions of such displays, as they affect retailer and manufacturer, are stated by Carl Percy in his book, "Window Display Advertising," as follows: (1) Establish the character of the store and the character of the merchandise; (2) Sell the institution and its policies; (3) Specialize on certain profitable items depending upon the people drawn into the store for the sale of other merchandise; (4) Feature special sales; (5) Endear the store to the public by window displays of general or civic interest.

ASSUMING that the manufacturer, in the design and making of his package, has incorporated therein the essentials to attract attention, he is naturally concerned with the distribution of that package in as many directions as possible. The package appears on the shelves and counters of the retailer and wins a recognition in proportion to its comparative value with other packages used to contain similar or different products. In newspaper, magazine and other forms of advertising, he reproduces that package, emphasizing, perhaps, some of its outstanding features—utility, convenience, shape, color, etc.—and this publicity furnished an excellent tie-up with the retail-store showing of his containers. What is more logical, then, than that he should continue the use of his package as one of the features in his window display?

Mr. Percy, in the book above referred to, has outlined rules of conduct for getting the right appeal into display material, as follows: "Remember first you appeal to an audience that is on its feet and moving. Your idea must take the place of the thought that is in the mind of the passerby, but you must have first the device to attract attention to your thought whether it be design, color or statement. Your appeal should be so designed as to be of as nearly personal interest as possible to your prospect. By direct statement, inference or the employment of device of common knowledge, your idea must make the passerby relate himself to your idea or, in other words, bring himself into the picture. In the arrangement of the elements of the display, put your main appeal in the center of the stage, subordinating your supplementary appeals or sales arguments. Visualize and dramatize by action or word whenever possible. Avoid passive action or passive statements."

Given an outstanding container design, each of these points can be realized—and in many cases, supplemented—by the use of the package. With the package as one of the elements of a display it is possible to incorporate one or perhaps more of several buying motives. The appeal may be made to any one of the following motives: health, pride, price, human traits, operation or convenience.

If, then, a manufacturer has designed his package sufficiently attractive to compel sales from the retailers' shelves and counters, it is reasonable to believe that the utilization of that same package, dramatized in a window or counter display which supplements with arresting or intriguing information relating to the quality and application of his product, secures a better and more profitable hold on his market for sales. Furthermore he is cashing in on the investment which he has already made in his package design and the plant equipment necessary to produce the package.

The Use of Package Inserts

"WHEN your customer opens your package, she or he will be glad to know how to use the goods, how to take care of them, why they are good, where to buy other goods you make and why she or he should buy other goods from you." This statement furnishes several very good reasons why the manufacturer of packaged merchandise should be interested in the use of package inserts. Another important point, and one wherein the package insert differs from many other forms of advertising, is the fact that it carries its message to a customer and not a prospect.

Package or bundle inserts may be divided into three general classes, as follows: The insert that goes into the original package sold to the customer; that which is placed by the retailer in bundles and packages that leave his store, and the insert that goes into a large container or bundle which is opened by the dealer.

Among the messages that can be carried with profit on package inserts are the following:

Refresh the mind of the buyer concerning the points that induced his first purchase of your product.

Tell the buyer how to use your product to the best advantage.

Tell the buyer of all the uses to which the product may be put.

Tell the buyer how to care for the product so that it will give the best service.

Acquaint the buyer with other products that you make or sell.

Secure names of buyers for mailing list.

Induce the buyer to send for samples of other products that you make or sell.

Secure the names of friends and acquaintances of buyers for your mailing list or for distribution of samples.

Tell the story of careful and clean handling of the product in factory and workshops.

Give the buyer information about the size and character of the company back of the product.

Make clear to the buyer the care used in the selection of materials.

Counteract specific or vindictive efforts of competitors.

Bring suggestions or information that will help you to improve your product or extend its sale to other fields.

Carry testimonials from other users to help strengthen the confidence of buyers.

The above statements relate to the value of the package insert as a merchandising factor in the distribution of goods and to the various functions which it may be expected to perform.

In every group of industry which concerns itself with the use of packages, there is an opportunity for increased sales in the proper utilization of the package insert. So much so that the latter has come to be regarded as almost an integral part of the package itself.

There are possibilities for a variety of uses for inserts and the progressive manufacturer of packaged merchandise is offered a wide selection, limited only by the type of messages which he wishes to convey to the customer.

Ink in Package Making

By ARTHUR S. ALLEN

BEAUTIFUL design, the finest choice of color and carefully prepared board are all for naught in the making of a package unless the proper inks are used. The cost of this item is generally such a small part of the total that often little attention is paid to it.

There are many instances where work has been ruined, not because the inks were not well made, but because consideration was not given to the way the job was to run, or to the timing of one color with another. A valuable rule to keep in mind is that in two-color printing the first color must have more tack than the second, in order that the first color will pull off the second without mixing and thus avoiding the dulling of both colors.

Below is a formula for a very satisfactory box ink to run on a single press on a good patent coated stock at a normal speed of 1500 per hour.

In a possible hundred parts the formula is divided as follows:

28 parts color
38 parts linseed oil varnish
15 parts magnesia
13 parts dryer
6 parts petrolatum

The color may be composed of two or three materials —one to make the ink to meet a price and another to get the exact shade, both being practically the same color. The use of cheap materials of an approximate shade to get the price down a few cents per pound frequently plays havoc with a handsome package on which thousands of dollars have been spent to wrap a product that has taken years to develop.

The second item of the formula, the linseed oil, is of many different consistencies. This acts as a carrier of the color so that the ink will lay on the board smoothly and be held there.

Boiled oil, and other like materials, are used for the same purpose but oil must be understood so as not to destroy the balance or working qualities of the ink.

Magnesia is put in as a cheapener and often too much is added. This has a tendency to weaken the color and destroy its brilliancy.

The dryer is added to set the ink and bind it to the board. More dryer is needed if the board is not properly seasoned. If too much dryer is added it causes the ink to set too quickly, making the sheets stick together.

Petrolatum is put in to take the tack from the ink and make it possible to run the presses at high speed without heating the rollers. Petrolatum is also added to stop pulling of the paper surface.

It is impossible in a brief article to explain all the minute difficulties encountered in the printing of a paper box, but it is obvious that it is easy by altering the formulas given above to ruin a job of printing by giving the ink too much or too little tack, thus throwing it out of balance.

MOST pressmen know how to treat an ink to make it work, but unless they understand how it is made in the first place they may get into serious trouble by altering it the wrong way or with the wrong materials.

As ink that is carrying 25 per cent of magnesia is weakening the color as much as it should be, it would be disastrous to add 15 per cent more. It might not be detected when the printing was wet, but when it dries out, the color would show much additional weakness and be less brilliant.

An ink should be tacky enough to clean the form after each impression, greasy enough to run without mottling or heating the rollers and brilliant enough to hold its color well on a given stock.

There is always a slight variation in color owing to stock, weather and rollers, so unless the most intelligent care is used one cannot expect perfection in ink results.

I have found it desirable to give a pressman a limit of error to work with. Provide him with, say, five steppings of color, which are made with the least amount of ink up to a full volume and then have him keep his color in the range of the three middle steppings. This method has produced satisfactory results and both customer and printer have a better understanding with less dissatisfaction because of poor work.

Importance of Adhesives in Packaging

By E. OLDHAM

IT is difficult to imagine a much more prosaic subject than glue. Of all the various factors which enter modern packaging glue is probably, and unfortunately, considered the lowliest by the average manufacturer. The probable reason is that glue has none of those qualities which come under the head of "consumer-appeal." The average manufacturer who packages his goods becomes enthusiastic on such subjects as package color, shape, design, etc. He will hold many conferences and lie awake at night trying to determine whether this color or that design or a certain style of lettering will create greater consumer-demand, and lastly he will think about glue for labeling, wrapping or sealing, if indeed he thinks about it at all. Often he buys the cheapest and most easily attainable adhesive, as long as it appears to "stick." Of course there are some notable, outstanding exceptions to this rule. A few of the large, successful packaging organizations, realizing the importance of glue in packaging, give as much study to the adhesives they require as they devote to the other factors of their packaging. Some even employ chemists and mechanical experts to supervise their adhesive operations. But, generally speaking, the average manufacturer who requires an adhesive to complete his package, looks upon glue as an annoyance and a necessary evil attending the packaging of his goods.

Manufacturers of adhesives do not claim that glue is the most important factor in packaging, but they do claim that glue is a vital factor, affecting not only the appearance, but the merchandising of the finished article. This claim has been corroborated time and time again by the bitter experiences of many manufacturers who gave little or no heed to the proper adhesives for labeling, wrapping or sealing their packages. In the field of labeling alone, which is a comparatively simple adhesive operation, thousands of dollars have been lost by manufacturers simply because they did not use the *right* glue for their particular labeling proposition. Many manufacturers, for instance, put up their products in tin or glass containers. They devote a lot of thought to the details of the package; they spend a good deal of money to make their containers distinctive and appealing to the consumer; they design and print expensive labels. And yet, when they come to attaching those labels to the containers they apparently think any kind of glue or paste will serve the purpose as long as it seems to "stick." The result is that many expensive and otherwise attractive containers lose their merchandising and advertising value because the labels curl or peel or fall off *after* the containers leave the manufacturing plant and *before* they reach the consumer. The question may fairly be asked: What good is a label anyway, unless it delivers its identifying and advertising message? The answer to this question establishes one important use for proper adhesives.

WHAT has been said about labeling applies with greater force to packages which require sealing and to cartons which require wrapping because those operations are usually far more complicated than labeling. Unless the proper adhesive is used for those operations packages will lose something of their compactness, neatness and attractiveness before they reach consumers, if indeed they ever get that far.

Glue is not merely something which apparently sticks, and there is no such thing as one kind of glue that will do all kinds of adhesive work. Glue is, or should be, a specially made product to perform a specific packaging operation. Different surfaces require adhesives of different ingredients and qualities. Different weight and grades and colors of paper require adhesives of different consistencies, "tackiness" and drying qualities. Different machines for labeling, wrapping or sealing require different glues or gums to suit varying styles of mechanical operation. A glue made for adhering delicate glassine wrappers to packages cannot reasonably be expected to seal fibre shipping cases.

IN the field of automatic packaging where containers are labeled, wrapped or sealed by automatic or semi-automatic machines, it is vitally important that the proper adhesive be used for each individual gluing or pasting operation. The deficiencies of an adhesive may be detected when packaging work is done by hand but machines operate without judgment. They continue to operate even with an unsuitable adhesive until forced to stop. Many expensive packaging units have been damaged to the extent of thousands of dollars by the use of glue which was not adapted for certain mechanism. The greatest danger lies in the unseen damage inflicted upon packages in mass production through the use of adhesives which deceive while they are apparently performing efficiently. Unfortunately such damage cannot be noticed in many cases until after the packages have actually been marketed. For example: a carton wrapping machine may be used for pasting on wrappers of light weight paper stock or a delicate shade of color; the paste used for the work may operate perfectly as far as adhesiveness is concerned but the paste may contain an acid or ingredient which reacts disastrously against the paper stock or color. Such reaction is generally not apparent until after the paste, which adheres the wrappers to the cartons, has dried thoroughly. When the cartons come from the wrapping machine they look clean and perfect enough to pass rigid inspection. They are often packed immediately in shipping cases before the wrapper paste has dried. The reaction against the paper or the color takes place *after the cartons are actually packed and shipped*. When the cartons reach the distributor or retailer the wrappers are often spotted or streaked, stained or discolored. Many "bargain-counters" of stores

throughout the country are loaded with otherwise fine merchandise which cannot maintain its price prestige on dealers' shelves simply because the wrong adhesive was used for a wrapping, labeling or sealing operation.

MANUFACTURERS, who put up their products in consumer-units, whether those units be packages, cartons, bags, bottles, jars, cans or barrels, can often save a lot of money and avoid a great deal of acceptance-resistance simply by getting the *right* glue for their particular adhesive operations. This is not any more difficult than getting the right size of containers or the right grade of packaging materials, but it is just as important. Any reputable manufacturer of glues and gums, experienced in solving adhesive problems, will be glad to study a manufacturer's particular adhesive requirements and prescribe a product which can be relied upon—*after* the packages leave the manufacturer's plant.

Use of Waxed Papers in Packaging

WAXED papers are generally divided into three large classes. There are, of course, many subdivisions of these three classes but for practical consideration these general classes are as follows:

Dry Waxed Paper: Impregnated with paraffine of a relatively low melting point. Carries little or no surface wax and is dry to the touch. Not entirely proof against water, vapor and air. Such a wrapper is a protection against contamination by handling or contact and, to a considerable degree, against changes in moisture content. Is not self-sealing on application of heat. Its use is indicated in many special instances.

Semi-Moisture-Proof Waxed Paper: A heavier coating of paraffine with correspondingly greater resistance to the passage of air and of water vapor. Is not self-sealing on application of heat. Used as a wrapper for many products, but especially useful as a liner or divider in package goods.

Self-Sealing Waxed Paper: Heavily coated with paraffine of high melting point, skillfully applied so that through the application of heat, the coating will fuse at folds and openings to form a container, which is, to a high degree, airproof, moisture-proof, odor-proof and insect-proof. Such a wrapper retains moisture and flavor and is, as well, a safe protective covering.

Dry waxed papers are good "twenty-four hour sheets" and admirably suited for use by delicatessen stores, groceries and meat markets as a covering and wrapping for moist and greasy products which require protection only for a short period of time. They are not nearly as airproof as self-sealing waxed papers but, unlike the former, can be formed into bags by the use of various common adhesives.

Waxed paper, unlike vegetable parchment paper, is neither water-proof nor greaseproof but, as pointed out, self-sealing waxed paper is airproof where parchment is not.

The use of waxed wrappers is being rapidly extended. New uses are constantly developing and with these new uses, variations in type of wrapper must naturally follow. Many industries and marketing practices have been changed through the adoption of protective and retentive coverings. Products of perishable or seasonable nature have become year-round staples. The question, "Is it fresh?" has become not a question of age, but of protectability in wrapping.

The varied uses of waxed paper of all grades are practically unlimited. While originally waxed paper was designed as a protective wrapper for food products, it has now extended its field of usefulness into a great number of industries. Many manufacturers have found that waxed paper fills a long desired method of protection against various factors that have had a tendency to deteriorate their products.

Another valuable property of waxed paper is its insulation value. Any food that is subjected to rapid temperature changes deteriorates quickly. An ice box is valuable not because it keeps food cold but because it prevents food from being subjected to rapid changes of temperature. Waxed paper performs a similar function.

Of recent years the metal trades have found that waxed paper is a good protector against rust and corrosion, due to its air- and moisture-proof protection qualities. This is especially true when a proper inhibitor is used. Laboratory tests show the protective qualities of waxed wrapped packages of food products against insect infestation, and the large use of waxed paper by progressive food manufacturers indicates that they realize the necessity of proper protection of their products, as well as creating the proper sales appeal with the discriminating housewife.

Recent developments have made possible the production of a waxed paper of a transparent nature, which thereby insures the user of the full advertising value of his printed carton, as the reading matter can easily be read through the waxed paper wrapper. It creates an individual showcase for each package. Any product which it is desirable to have safeguarded from air, moisture, odor and rapid temperature changes can best be protected by using the proper grade of waxed paper.

Many factors enter into the selection of the proper type of wrapper for each individual product and the development of such wrappers has been, for some years, the subject of intensive scientific research. Chemical changes, moisture content, retention of aroma, attack by insects, fermentation, and countless peculiarities in the product to be wrapped are to be considered. The services of fully equipped laboratories of various waxed paper manufacturers are at the disposal of users of waxed paper to assist in determining waxed paper problems.

Genuine Vegetable Parchment

By JOHN R. DUFFORD

THERE are essentially two kinds of parchment, animal and vegetable. Animal parchment is the prepared skins of animals, usually sheep, and has been used in the past chiefly for documentary purposes. Vegetable parchment, as the name implies, is basically of vegetable origin.

The preparation of pure vegetable parchment consists of two separate and distinct processes. The first is that of manufacturing the paper later to be parchmentized called waterleaf. In order that the second process, that of parchmentizing, may be effectively conducted, it is necessary to exercise every care in the selection of raw materials entering into the waterleaf, the purest cellulose producing the best results. Waterleaf for vegetable parchment differs from most papers in that it does not contain sizing or loading materials. Small quantities of either of these substances seriously impair the parchmentizing of the waterleaf to which they have been added. As the resultant finished vegetable parchment is in a large measure dependent upon the quality of the waterleaf it is clear that the processing of the waterleaf requires expert supervision and attendance.

The second process in the manufacture of vegetable parchment is that of parchmentizing. It is this process which renders the finished product so widely different from other papers. When properly prepared, waterleaf is subjected to the action of sulphuric acid and under suitably regulated conditions a peculiar reaction occurs. Action of the acid at first produces a gelatinous substance called amyloid, which completely envelops each individual fibre. The amyloid, in addition to having enveloped the fibres, has filled the interstices between them and by a cementing action has bonded the material into one homogeneous mass.

Thus we find the original waterleaf has undergone such modification by treatment with sulphuric acid that it no longer softens or separates into its constituent fibres on being immersed or even boiled in water or salt solution, but retains its coherence, is impervious to water, grease, blood and air, and preserves its newly acquired properties when re-dried. Pure vegetable parchment is semi-transparent, odorless, and tasteless.

EVERYONE who has had to deal with moist, delicate, perishable food products such as butter, ice cream, fresh meats, fish, etc., appreciates that their marketing value is considerably elevated by using the proper wrapper.

Butter, the extremely important everyday article of food, is one of the most delicate of food products and is exceedingly susceptible to contaminating influences. Realizing this fact, every precaution is taken in the manufacture of vegetable parchment to have the product reach the consumer in as pure and sterile a condition as it is humanly possible to make it under operating conditions. Even so, it is admittedly good practice to subject the butter wrappers, tube liners and circles to the action of boiling water or boiling super-saturated salt brine immediately before using. The effect of the above treatment is twofold, the heat destroying the mold spores that may adhere to the vegetable parchment, and the brine adhering to the vegetable parchment helping to inhibit growth of mold germs that may be in or on the butter.

One can readily understand that this extremely important preventative measure against mold infection would not be possible if ordinary paper were used. Under this treatment the paper would disintegrate to a pulpy mass and be rendered useless as a food wrapper. However, one of the outstanding properties of pure vegetable parchment, its insolubility, renders it extremely adaptable to this procedure. Then, too, this inherent quality of vegetable parchment, the fact that it does not disintegrate in contact with moisture, makes it possible for the ultimate consumer to not only remove the wrapper intact, but also, if only a portion of the product is to be used at one time, to rewrap the remainder, thus preserving the original good qualities of the butter until entirely consumed.

THE property of butter to absorb readily foreign odors and acquire an unpleasant taste makes it imperative that a butter wrapper shall be odorless and tasteless. Pure vegetable parchment is odorless and tasteless and these characteristics unquestionably recommend its use to the packer of butter.

Butter tends to lose moisture during transportation and in storage. Aside from the reduction in actual value due to the diminished weight through loss of moisture, excessive leaking may injure its flavor. Vegetable parchment, being impervious to moisture and air, not only reduces this shrinkage to a minimum, but in storage prevents, to a large extent, losses incurred through contact with air, which causes deterioration of butter through oxidation or bacterial action, or both. Vegetable parchment-wrapped butter is also protected from the direct action of light, the tendency of which is to intensify bacterial action.

The general wide-spread demand for clean food makes it necessary for the producer to market his product in as cleanly and attractive a manner as possible. The translucency of the vegetable parchment wrapper presents the butter, on removal from the carton, in a clean, wholesome, and appetizing condition. When printed with colorful designs of the various brand names in brilliant fast color inks, vegetable parchment has sales appeal as well as protective qualities. Then, too, the print may be handled with facility because the fatty constituents of the butter have not permeated the parchment. It is the predominating characteristics of pure

vegetable parchment briefly outlined above that have earned for it the distinction of being the best protective wrapper for all moist food products.

Vegetable parchment can be made into bags or envelopes. It is also fabricated with cardboard in box form as a grease- and moisture-proof liner. Manufacturers of genuine vegetable parchment maintain special departments and will fully cooperate without charge, with prospective users of their product.

Paper Testing Equipment

THE Mullen tester indicates actual bursting strength irrespective of any other factor. It operates on the hydraulic principle, the material to be tested being clamped over one end of a cylinder containing liquid which is compressed by the action of the motor. The encased fluid is thus forced to exert pressure on the material which is protected from becoming wet by a rubber diaphragm. At the same time the fluid acts directly on a standard pressure gage which records the bursting strength in actual pounds per square inch, the standard for measurement recognized the world over.

At the bursting point the indicator on the gage remains stationary, giving a positive record of the exact result of the test.

The Mullen tester is established as the only correct basis for testing paper, textiles and other materials for actual use, because it determines the exact bursting point. The operation of this apparatus distributes pressure uniformly over the entire area under test and thus feels out the very weakest spot of the stock. It bursts the fibres at the very point of weakness regardless of whether the strain be with the grain in paper or the warp in fabrics, just as a sufficient strain would do in actual use; therefore, the slightest imperfection determines the result of the test.

The Mullen motor-driven tester is quick in action and easily operated. Its consistency of operation has won for it the hearty endorsement of manufacturers, dealers and users of paper goods, textiles and similar materials everywhere, and has caused such highly exacting institutions as the United States Government to adopt it for use.

Hand operating testing instruments that work to such a fine degree of accuracy as the Mullen tester, are sensitive to the varying action of different operators. To overcome this variation and at the same time being a machine for faster work, motor driven Mullen testers have been perfected which make tests of perfect uniformity, whether operator be the most inexperienced or seasoned operator.

A wheel clamp motor-driven Mullen tester is an adaption of the standard Mullen tester and is designed especially for testing heavier material, such as corrugated, fibre and box boards, wrapping paper and other material up to 1000 lbs. pressure per sq. in. The lever clamp motor-driven Mullen tester is accurate, uniform and positive for determining the exact bursting strength of any material up to 300 lbs. pressure per square inch.

Glassine Papers

GLASSINE papers, from the standpoint of the protection afforded to the products wrapped or otherwise contained in them, possess the following qualities:

Greaseproof	Airproof
Greaseless	Moisture-proof
Dustproof	Strength

Considering adequacy of application they are easily printed, readily gummed, furnished in either rolls or sheets, obtainable in various weights and can be successfully and economically used in automatic wrapping machines.

With respect to the merchandising properties of glassine papers—that is, their ability to attract attention and obtain sales for a package—the quality of transparency is undoubtedly the greatest argument for their use. This quality holds true whether the papers are plain, embossed or furnished in colors. Glassine papers likewise offer an opportunity for a wide diversity of design either as a background for labels or other decorative features.

ALTHOUGH recognized as an ideal wrapping agent for many purposes, it was found that with the development of the packaging of foods of a perishable or semi-perishable nature, better protection is given such articles when the glassine is waxed. Treated with a coating of tasteless and odorless paraffine wax the glassine becomes a most effective protective wrapper, for in addition to the greaseproof, dustproof and transparent qualities it becomes moisture-proof as well.

Other waxed papers are used extensively by the manufacturers of various food products, but waxed glassine has proved itself superior for certain commodities so that, in several instances, it has supplanted other waxed papers. For instance, the baking industry has adopted waxed glassine as practically a standard wrapper for cakes, cookies, etc., within the last four years.

Glassine paper as commercially produced today is comparatively strong, flexible and pliable. When waxed it becomes self-sealing and its transparency is enhanced. Used as an outside wrapper for a printed carton it presents a glass-like appearance through which the finest print is plainly legible. This results in the maximum advertising and sales value of the well-printed cartons which are coming into favor in present-day methods of packaging and merchandising.

Further considerations which admit the ability of glassine papers to perform package functions are evidenced by the fact that these papers have been successfully used, individually and collectively, as wrappers, dividers and liners for cartons, cans and other types of containers as well as for separate or individual wrappers, applied directly to the product and forming thereby the package itself. Furnishing an ideal wrapping for many purposes, and due to their improved quality and adaptability to packaging operations, the use of glassine papers has become increasingly popular in the packaging field.

EARLY in the development of packaging, it became apparent that glassine was, in many ways, ideal for machine wrapping; it was inexpensive and it filled the bill nicely as to the requirements of appearance and protection. The tobacco industry was one of the first to use automatic wrapping machinery with glassine as the wrapping material. Almost all the leading brands of cigarettes have a glassine wrapper over the package, and hundreds of machines are now in use on cigarettes alone.

The advantages of glassine wrapping were quickly realized by other industries, and a demand for wrapping machines to use glassine sprang up. This had been forseen by the wrapping machine manufacturers, and they were ready with a number of models for packages of various sizes and shapes.

Many different types of machines have been built for wrapping these different types of packages. For the most part, these machines are built for one size and one type of wrapping only, although certain types are more or less flexible. Some types are faster than others, but an average speed of all types would be about 100 packages per minute.

Glazed and Fancy Papers

THE following definitions apply to the various types and kinds of glazed and fancy papers as well as certain trade terms. As far as is known, this is the first attempt to publish a glossary of such terms. Suggestions for additions and improvements will be appreciated by the PACKAGING CATALOG or the Glazed and Fancy Paper Manufacturers Association, Springfield, Mass.

Flint: A coated paper, white or colored, finished by rubbing with flint stones, thereby producing a very shiny surface.

Friction Glazed: Coated papers that are finished in a friction calender which produces a highly polished surface as a result of the rotary action of a steel roller.

Plate: Coated papers finished in a stack calender which produces a dull finish by means of pressure.

Metallics: Coated papers coated with such metals and in such a manner as to give the brilliant and dull lustres of metals.

Mica: Papers whose coating material includes small particles of mica which give a sparkling appearance.

Water-proof: Papers whose coating material includes such ingredients that the surface becomes to a large extent non-absorbent of water.

Embossed, Plain: Papers which have a pattern pressed into them. The raised portion usually appears on the front surface.

Embossed, Heat: Papers to whose coated surface has been applied a heated roller with a design; the raised portions of which, coming in contact with the coated surface, cause a change in the shade of color.

Embossed, Print: A plain embossed paper which in addition has ink applied to the raised portions.

Printed, Surface: A fancy paper on which a pattern of many colors has been printed by direct transfer of ink from raised portions of printing rollers.

Printed, Intaglio: Similar to the surface printed paper except that the ink is transferred from the depressed places of the pattern roller.

Holly: Papers with a printed or embossed holly design, largely used at Christmas.

Multi-Color: Trade name of a group of printed and embossed papers manufactured by a fancy paper manufacturer. Sometimes this term is used to designate any paper with many colors.

Pearl: The well-known and very beautiful mother-of-pearl paper. The paper is coated by a special process with certain salts and then so treated that a crystallization process occurs which develops the mother-of-pearl design. This is a French manufacturer's product. It is understood that an American company has developed a different process of producing the same results with pyroxyline.

Velours: A paper coated with flock. Flock is a finely powdered wool or cloth. Sometimes the term "velour" is applied to imitation leather papers.

Agate Marble: Papers with a design imitating polished colored marble. The design is sometimes a printed design but real agate marble papers are made by floating metallic powders on water from which they are transferred to the paper. This is an old process in Germany where it is done by hand. An American company has patented and operates a machine for doing this.

Tinfoil: A paper coated on one or both sides to imitate tinfoil.

Gold and Silver: Papers coated with metallic substances which look like gold or silver.

Brush Finished: Papers which after calendering are further polished in a machine which thoroughly brushes the surface. This process is not in as common use as formerly. The final finish is smoother and thereby made more dustproof.

Tissues, Fancy: Tissue paper upon which has been printed a fancy design. Frequently, it is embossed with another design. Largely used for envelope linings.

Embossing Designs, Common: There are around 100 embossing designs commonly used, such as basket, skytogen, etc.

Embossing Designs—Exclusive: There are several hundred different embossing designs, in addition to the common ones, which have been originated or purchased by individual manufacturers who own the designs exclusively. Such designs are frequently protected by copyrights. Most manufacturers do not desire to copy others' designs, preferring to have original and exclusive designs of their own. The Glazed and Fancy Paper Manufacturers Association, 146 Chestnut St., Springfield, Mass., has a file of the designs of its members who constitute about 70 per cent of the glazed and fancy

paper industry. There are over 600 printed and embossed designs in their files. They are glad to answer inquiries as to where any particular design of paper can be obtained.

Designs, Printing: The same as applies to embossing designs above applies to printing designs.

Trade Mark Designs: Trade marks printed or embossed on the paper.

Coated, Fancy: Papers with fancy effects produced on the coating machine instead of by printing or embossing. These papers are usually several colors blended together in a manner which gives a fancy effect without a design which exactly repeats itself.

Leather Grain: Papers with leather grain designs which are either produced by printing or embossing. Common examples are alligator, Persian lamb, etc.

Wood Grain: Printed papers with designs imitating various wood grains.

Fabric Designs: Printed designs, in imitation of various fabrics, commonly known as "fabric prints." Embossing designs in imitation of fabrics such as rep, linen, etc.

Marble: See agate marble.

Floral: Printed and embossed designs which include all kinds of flowers.

Bodystock: The kind of paper such as kraft, ground wood, etc., which is coated, embossed, etc.

Weight: The weight per ream on a basis of 500 sheets, 20 in. x 24 in., of the bodystock.

Ream: 500 sheets is commonly used instead of the 480 which we learned in school. Size 20 in. x 24 in. has been commonly used as a basis for prices. There is a tendency at the present time to use 20 in. x 26 in. because these papers are most frequently sold in 26 in. rolls. It is thought by many that 25 in. x 40 in. will come to be the common basis since this represents 1000 sq. in. and quantities could therefore be handled by the decimal system.

Rolls: A roll usually contains from three to four reams of the lighter weight papers, 17 lbs. to 25 lbs., heavier papers naturally having fewer reams per roll. This applies to 24-in. and 26-in. rolls.

Considerable delay is caused by customers sending in an order for a certain number of reams of a certain color. Such an order does not state what size ream they desire, what kind of paper is wanted for a bodystock or what kind of finish is needed. Orders for paper should state the quantity—whether in rolls or sheets—size of rolls or sheets—basis of quantity—manufacturer's sample number if possible—otherwise full details regarding the color, finish, and bodystock. There are many shades of most colors, hence, to say that a red is desired is not specific enough. A sample of the paper desired covers the need if the sample is large enough; this sample should be at least $8\frac{1}{2}$ in. x 11 in. and larger if possible; a sample $\frac{1}{2}$ in. x 3 in. is so small that the weight of the bodystock cannot be determined.

Glazed and Fancy Paper Trade Customs

TRADE customs as stipulated by the Glazed and Fancy Paper Manufacturers Association are as follows. These are stated as of February, 1928.

Standard Rolls

1. Standard Widths of Paper in Rolls.
   (a) Ordinary glazed, plated and printed papers, 26-in. rolls.
   (b) Extra fine glazed, flint glazed, water-proof and embossed, 26-in.
   (c) Fancy, 26-in.
2. Contents of Rolls.
   (a) To be stated as the number of sheets 20 in. long by width of roll.
   (b) Glazed, plated, printed or any flat-surfaced papers weighing not over 30 lbs. to a ream 20 x 26 to contain not less than 1500 sheets.
   (c) Paper weighing over 30 lbs. to a ream 20 x 26, not less than 1000 sheets.
   (d) Paper with embossed or fancy surface, not less than 1000 sheets.

Standard Sheets

3. (a) A standard sheet in any grade shall be 20 in. in length by the width of a standard roll.

Colors and Shades

4. Standard Colors and Shades.
   (a) Standard stock shall be the forty (40) colors (also white and india) adopted by the Association and accepted by the War Industries Board, November 15, 1918.
5. Special Colors.
   (a) The prices for special colors shall be based on a quantity of 25,000 sheets (50 reams) of a standard size. Smaller quantities may be made at an advanced price based on the increased cost of production.

Variations

6. (a) On all special runs the normal variations in quality, weight and shade shall be accepted.

Overruns and Underruns

7. (a) All special orders shall be subject to overruns and underruns as follows: Orders under 25,000 sheets (50 reams), standard size, 20 per cent. Orders 25,000 sheets (50 reams) or over, standard size, 15 per cent.

Prices

8. Basis of Prices.
   (a) All prices unless otherwise specified are for paper in rolls; on the basis of 1000 sheets (or reams of 500 sheets) of a standard size or on the unit size 25 x 40.
   (b) Prices and quotations are subject to change

without notice. All orders, contracts and agreements are contingent upon strikes, fires, accidents or causes beyond control.

(c) Special colors: See Item 5.

Extra Charges

9. (a) Extra charges are made for sheeting, slitting or rewinding based, unless otherwise specified, on 1000 sheets of standard size (or on a ream of 500 sheets) or on the unit size 25 x 40.

(b) For sheeting standard rolls to lengths greater than 20 in. or for sheeting rolls wider than standard the charge is to be proportional to the basic rate.

(c) For sheeting rolls narrower than standard or lengths less than standard the charge is to be the same as for standard size.

(d) A charge in excess of the basic rate is to be made for sheeting, slitting or rewinding less than a standard roll.

Terms and Delivery

10. (a) All prices are f. o. b. mill.

(b) Make and Hold Orders:
All "Make and Hold Orders" are to be accepted only on condition that a specified date for the entire delivery be given, at which date the goods are to be charged and the invoice accepted for payment whether goods are ordered shipped or not.

(c) A discount of 2 per cent may be allowed only for cash in 30 days from date of invoice, except that where several invoices fall in one month, discount may be allowed if settlement be made 30 days from the average date of those invoices.

Claims

11. (a) All claims must be made within ten days from receipt of goods.

(b) No claims will be allowed on goods cut, printed, soiled or damaged by the received. This paragraph shall not apply to claims based on apparent manufacturing defects.

Metal Foil in Packaging

THERE are two chief reasons, generally speaking, for using foil in a package: (*a*) to catch the eye and (*b*) to protect the goods. A bright, shiny surface has always held a fascination for the human eye. A baby instinctively grasps at a bright, shiny coin or a watch. What child doesn't delight in playing with a piece of foil? Then as we grow older the realization also comes that the quality product is usually wrapped in foil to maintain its original freshness and purity. And the natural consequence is that the foil-wrapped article is the first to be seen and the first to be sold.

What then is the utility of the metal (tin, aluminum, lead) foil wrapper and wherein can we make best use of the properties of metals to put such a combination into our hands? A metallic surface is impervious. Neither liquids nor gases will pass through. Even such infinitesimal particles of matter and vibrations of the ether as x-rays, radium emanations, radio waves, etc., are effectually stopped. Nothing is quite so effective as a solid metal sheet to stop diffusion of the small units of matter.

The furnishing of metal foil in rolls has been a great convenience in its use on automatic wrapping machines and has not only been of benefit to the foil industry but has increased the marketability of the product and general efficiency all along the line from manufacturer to retail customer.

PROBABLY the earliest users of metal foil were the tea, tobacco, candy and chewing gum industries. Then followed food products, cheese, butter, soap and various utility articles such as friction tape, etc. The modern, neat and attractive bottles of ginger ale, grape juice, or other prohibition era beverages owe a large part of their attractiveness to the use of a piece of foil on the neck of the bottle. Metal foils are also used as liners for bottle caps and seals. The ready workability and attractiveness of metal foil makes it particularly adaptable for use in ornamental window and showcase displays.

Metal foils are backed in a number of different ways: (1) with wax paper; (2) with paper attached to the foil by means of glue, and (3) with paper cemented to the foil with chemically pure asphalt. Some foil, of course, is used without any backing; while, in some instances, specially treated papers are used for backing. Both backed and unbacked foil can be used for hand packaging and in connection with automatic packing machines. However, the use of unbacked foil for hand packaging is limited and largely depends upon the size and shape of the commodity being wrapped.

TYPES OF METAL FOIL USED

Commodity	Type of Foil
Bottles	Unbacked
Bottle caps and seal liners	Unbacked
Cake	Waxed paper backed
Cheese	Waxed paper backed or backed with specially treated paper
Chewing gum	Waxed paper backed
Coffee	Asphalt backed or glue lined paper backed
Confections	Waxed paper backed or unbacked
Corsages	Unbacked
Films	Waxed paper backed
Ice cream bars	Waxed paper backed
Soap	Waxed paper backed
Tea	Unbacked
Tobacco	Glue lined paper backed
Yeast	Unbacked

Note: The foil used in connection with any of the above commodities may be either plain, embossed, lacquered or printed.

An interesting new development utilizing to the fullest extent the protective properties of foil is a foil-surfaced covering for tight-wrapped packages which provides a

sealed package with an impenetrable, air-, moisture- and weevil-proof wrapping. This consists of foil inseparably mounted on paper by a water-proof cement which is sealed around a cardboard shell by automatic machinery. For perishable products like prunes, dried fruits, raisins, cereals, coconut, peppermints, etc. The foil-tight-wrapped package opens a new field of marketing possibilities.

The surfacing of cardboard with foil has made possible the metal-lined or metal-surfaced carton—a container combining the best features of both metal and paper packages. The silver-like metal surface not only catches the eye but provides fullest protection to the contents. This type of carton is especially suitable for delicate products like tea which possess a fragrance that must be retained.

Still another development in the container field is a foil covering paper for fancy boxes, consisting of richly-embossed foil in silver or colors cemented to paper. This material is remarkably tough and resistant to wear, yet is soft and pliable enough to work with ease in box-covering machines.

Roll Leaf in Packaging

By T. P. MILLIGAN

ONE of the most interesting and efficient products that has been scientifically developed for embellishing wrappers, box tops, packages, books, greeting cards and trade marking goods such as pencils, tooth brushes and a multitude of other products that formerly used flat, beaten gold or Dutch metal can now be purchased in continuous rolls from one hundred to six hundred feet in length, cut to any desired width from master rolls twenty-four inches wide. This product is called roll leaf. It is really a transfer foil as its basic composition is bronze powder which is coated uniformly on a waxed glassine paper carrier strip. After this process, it is sized with a preparation that makes it adhere to almost any article that requires stamping, when subjected to heat. Roll leaf is manufactured in numerous shades of gold, bronze, aluminum and many shades of metallic and pigment colors.

There is apt to be some confusion in the trade as to the difference between gold bronze powder printing and embossing and roll leaf stamping. In the first place, a bronze printed and embossed job requires three operations whereas a roll leaf job requires but one—for stamping and embossing. There is actually as much difference between a bronze printed job and a roll leaf stamped job as there is between electrotype printing in comparison with engraving. The roll leaf job has brilliancy, attractiveness, and lasting qualities and is the nearest approach to genuine gold stamping. There are to be found numerous examples of roll leaf stamping which were produced on an ordinary press with the use of brass dies in one operation at practically the same ease and speed as ordinary printing.

IT is a simple matter to have an artist draw a design that meets with approval. A brass die is ordered from this drawing and mounted on the heated head of an ordinary embossing press or Colt's Armory type printing press. It is possible to have either raised or flat letters on any die that is desired as the brass die can be cut with a combination of both or either. The stamper prepares the make-ready for which a hard press board is recommended together with the building up with ordinarily gummed paper tape and cutting away with a sharp knife to bring up the counter wherever desired. It is a very simple operation.

There have been many new developments where production for long runs is required. Among these are the following:

Thermostatic heat controllers which keep the press uniform temperature and enables the operator to feed his job at practically the same ease and speed as ordinary printing.

Automatic roll leaf attachments which have from one to three different feed rolls which enable one to stamp a job most economically, due to the different position of the dies that may be desired. Each strip of leaf is cut for each individual die and automatically moves the exact length required after each operation of the press. This enables the operator to speed production as well as to realize great economy in the application of roll leaf.

Roll leaf equipment can also be supplied with a duplex feed arranged so that the leaf can be fed from right to left as well as from front to back on any upright power press. This is a great advantage in stamping frames for box tops or book covers as all four sides of the frame can be stamped in one operation with this equipment.

IT has taken many years to develop roll leaf commercially and it is today being so universally used and so uniformly made by the most scientific and improved machinery that its value as a commercial product is unlimited. Ten years ago flat leaf, a bronze composition, had to be cut from individual packs of five hundred sheets to the exact size that was required for each job. This operation necessitated laying on individual sheets and great care had to be used in feeding the article that had to be stamped in order that the thin sheet of leaf did not move from its position when being fed into the press. This involved considerable time and it was also necessary to brush and clean off the surplus leaf that stuck to the article being stamped. An ordinary stamper could feed successfully about twelve hundred to two thousand impressions per eight-hour day with the aid of two or more girls. With the advent of roll leaf, the same stamper can now produce from five to eight thousand impressions per day and the elimination

of laying on of individual sheets and cleaning off has increased production many times.

With the introduction of roll leaf, feeding devices have been perfected, which are attached to the ordinary type of Colt's Armory printing press and standard types of embossing presses, the feed rollers being set for a given length of pull that moved the roll leaf the exact distance required for each impression. The roll leaf is cut to the exact width of the die with a fractional allowance on each side and the attachment pulls the leaf the exact length desired. Therefore, roll leaf has enabled thousands of concerns to increase their production and improve the appearance of their product, with a small investment in new equipment.

Crepe Wadding

CREPE wadding is extensively used as a packaging adjunct in the packing of tablets, capsules, ampoules and various pharmaceuticals, cosmetics, bottled goods, scientific instruments, fragile and highly polished specialties. Such wadding to meet the several requirements should be white, soft, of dependable consistency in thickness and grade and be highly absorbent. It may be obtained in rolls, sheets and pads.

Similar material, provided in various thicknesses and paper backed, ready for use, is also utilized for box top padding. Among the economics which have been pointed out by companies who have used this padding are the following: due to the paper backing and the flatness and uniformity of sheets, it can be readily jogged in a cutter, while most padding has to be laid out separately, each sheet at a time; the paper backing eliminates the need of placing a padding and a manila sheet on separately when they are applied at the wrapping machine.

Transparent Cellulose Wrappings

TRANSPARENT cellulose wrapping material has been found by manufacturers of countless products to be an effective merchandising aid in protecting those products and improving their appearance.

Such wrappings are as transparent as the finest plate glass. Details of color, size, shape and texture are as visible through them as if the products were unwrapped. Their use provides protection from the detrimental elements which packages meet in their journey from maker to consumer. The wrapping is package insurance for it gives the package an hygienic atmosphere and guards against germs, flies, dust and all sorts of contamination. Transparent cellulose is oil and greaseproof, odorless and odor-proof, strong, pliable and airproof. Being made from the finest and purest woodpulp obtainable, it is absolutely sanitary, in fact it is pure enough to eat, though not particularly digestible.

A special moisture-proof wrapping, retaining all the other desirable properties of the regular material, has been developed. It is practically impervious to water vapor and has been found an ideal wrapper for baked goods, sticky or hard candies, fish, dried fruit and cigars, all of which need moisture-proof protection.

A transparent cellulose wrapping lends a sparkling appearance to a package that attracts the shopper's eye and commands attention. Likewise the appetizing goodness of food products is clearly evident through the transparent wrap which gives a quality atmosphere to the product it wraps and makes it ideal for display.

It can be supplied in stock size sheets 40 in. in length and from 34 to 37 in. in width, in sheets cut to specification or in rolls of various widths and weights for machine wrapping or any other use requiring continuous lengths. It can be procured in various thicknesses, embossing and colors as well as the special moisture-proof sheeting. It is approximately 0.0009 in. thick and thicknesses up to 0.007 in. are available if desired.

Such wrapping material can also be fabricated into envelopes, used as a window in boxes and it may be printed permitting the advertiser's trade mark and identification.

Wooden Boxes as Packages

A wooden box possesses strength and, properly constructed, incorporates most of the structural elements of the successful package. In re-use it is particularly valuable for even a comparatively small box can be utilized as an ideal cigarette humidor or a container for studs, cuff links and many other small articles after its original contents are gone. With the application of certain decorative effects to the outer and inner surfaces of the box, it can comply to all of the essentials of the attractive as well as the practical package. The same effects of beauty in color, design and neatness can be applied to wooden boxes as to containers made from other materials.

In the lining of these boxes decorative and imitative papers are used, also fabrics such as velveteen and silk, and these are selected with the idea of obtaining harmony or contrast with the exterior design or coloring. Likewise, strap or brass hinges, locks, clasps and other small appurtenances are applied to the boxes and add to their effectiveness and attractiveness. Partitions, as well as removable compartments, may be placed in the original boxes as they are supplied to the purchaser or after the contents have been removed.

With the many possibilities of treatment, both for the exterior and interior of the boxes, there is an opportunity—in considering the use of color as applied to such boxes—to link the contents in a definite way with the package. So that if the contents are colored or conform to a certain design, the box exterior can carry a reproduction of this color or design and actually serve to identify the product packaged.

Wooden boxes have long been used and highly regarded as containers by several of the packaging groups because of their strength and durability. But with the possibilities offered for the application of color and design to wooden boxes there is a renewed interest on the part of the manufacturer who seeks effective and economical containers.

Folding Cartons

By WILLIAM A. SMITH

IN selecting the carton for a product there are many important points to consider. Besides providing a suitable container and furnishing protection for the product, the carton reflects the integrity and fidelity of the manufacturer. In this age of mass production, the merging of big industries and the prosperous growth of our country we find a tendency for bigger business coupled with keener competition. The wide-awake and progressive manufacturer perceives this growth and uses every possible endeavor which will lead toward increased profits for his product.

An outstanding factor for the manufacturer who distributes his product in package form to the consumer to consider is the sales appeal of his carton. Too many manufacturers give too little attention and study to their cartons—and here is a field in which the possibilities for improvement are indeed unlimited.

Price consideration is the reason for the mediocre packages which line the dealer's shelves today. Those packages do not move because of the lack of an appetite or sales appeal. But an attractive package is not the secret of bigger business; it is a part of the sales stimulant, for the essential factor is the product itself.

TWELVE important things to consider carefully in the preparation and the manufacture of a carton are: size and form; attention value; composition; illustrations; color; engravings; reproductions; plate printing; lithography; stock; standardization and circulation.

Size and form. Including the top and bottom, any ordinary carton has six sides for advertising messages. The form or shape should be planned and constructed for the convenience of display and handling. With the same number of cubic inches many different forms or shapes may be obtained—depending upon the product to be packed—being at all times a suitable container for the products as well.

Attention Value. A carton should attract attention. The color scheme and design when properly made should be pleasing and distinctive and the name of the product should be easily read at a reasonable distance. If an illustration is used with other type matter, caution should be exercised in preventing a crowdedness that detracts and is not pleasing to the eye. No one will dispute that Aunt Jemima Pancake Flour and Lux cartons are pleasing and distinctive packages and are recognized at a distance.

Composition. The general balance of design is important. Top or bottom heaviness is dangerous. The eye's most natural follow-through is from upper left down to right. There is no general rule for using the same style of type throughout the design of a carton. The name of a product may be in a block letter and the descriptive matter carried out in another style. Upper and lower case has been found easiest to read. Simplicity is most essential in a good-looking carton. Blank space, copy and proportion are important. The tendency to crowd in too much copy on a carton is a fallacy. Successful manufacturers do not utilize all of the six spaces—in fact, the tendency is toward very little copy.

The name of the product, an illustration, some words concerning the nature of the product, and the name and address of the manufacturer occupy the front. The back is often a duplicate of the front. A few remarks about the preparations or use of the product may be made on the sides while the top may carry the name of the product. If a long list of directions or recipes is found necessary it may be printed on the back of the carton, providing the list is not too long. The most successful way, however, to get your message to the consumer is through an insert placed within the carton.

Illustrations. Illustrations are not merely used to fill space. They play just as important a part of the carton as does the name or the color scheme. There is more reason why an illustration for a carton should be more accurately made than for an ad appearing in a publication—it is a permanent trade mark for the product. When planning a carton for a product the best artist should be called in for consultation. Technique for carrying power should be considered before a selection is made. Mistakes are too often made by the execution of a very effective illustration but this effect is lost at a short distance from the eye. It is a mistaken idea that it is necessary to use four or more colors to get an effective illustration. Many striking effects are produced in few colors.

Color. Surely among the many thousands of color shades one can readily find a pleasing and distinctive color combination. We of course receive all our basic color combinations from the primary color scale. To place together just the right color combinations is no simple task and it should be left to one who understands harmonies in order to receive a successful result. Bright colors are always favored because of their carrying power. Clean and brilliant colors play an important part in making a carton attractive. They have a tendency to give one the impression of freshness and quality, whereas the dirty and dull colors give the impression that the goods are old and shopworn.

To bring life to dull colors they should be varnished. Price mindedness has been the cause of many poor-looking cartons. The printer, lithographer or boxmaker give you just what you pay for. They have their standard color combinations and when it is a cheap carton they place this on their standard color combination together with others of a similar nature and as a result your carton has the same look as a hundred others. There is nothing distinctive or attractive. It is just another carton.

It is true that a special color combination costs more money but that is only true when a small quantity is wanted. It is a far better policy to pay a little more

money in the beginning for an attractive and distinctive carton, than it is to pay little money for a carton with the idea that it is only a container for the product.

Engravings. There are two distinct processes of engraving commonly used in the manufacture of cartons. One is used by the plate printer and the other by the lithographer. Original engravings when made for the plate printer should be deeply etched and mounted on heavy metal instead of wood to assure sharpness in the making of electros from which to print the edition. The original engravings should never be used for printing purposes. Many expensive engravings have been ruined to save a few dollars.

On account of the chemical process of the lithographer it is difficult to have engraving plates made by any person other than the lithographer who is to print the cartons. Thus it becomes necessary to furnish the lithographer with the complete sketch together with possibly a set of working drawings. When making a proof by either the plate printer or the lithographer it should be made on the same stock as will be used on the completed edition.

Reproductions. The most successful reproductions are made from sketches or original working drawings that are approximately one third larger in size. Drawings that are too large usually lose a great deal of character. To receive the best results from your design it is best to consult your printer or lithographer before attempting to make working drawings or engravings. When halftone screens or Ben Day tints are wanted it is important that the stock on which the job is to be printed is carefully considered because the size of screens are determined by the printing surface of the stock.

Plate Printing. Many a carton job has been ruined by poor registration, not because it was the fault of the printer, but because the printing plates were not made practical. To correct a situation of this kind is to begin with the making of the original sketch. Before undertaking the execution of a design consideration must be given to the preparation of making the plates in a practical way so that printing therefrom on the presses can be done with as little trouble as possible. Fine thin outlines around a color or a fine line as a border too close to the score lines are impractical and dangerous. This also applies to the lithographer.

Lithography. Within the last few years the offset press has made it possible to reproduce some colorful subjects on cartons. Some of the most attractive cartons are made on these presses. This press prints on any kind of stock, rough or high coated, and excellent results are obtained. Sharpness of lines and accurate reproduction of pictorial subjects have been successful. When a dull or rough finish is wanted the offset press does an excellent job.

Stock. There are many classes of carton board. The most commonly used is the clay coated, either news or manila back, and patent coated also with news or manila back. The clay-coated stock has a superior printing surface and is used for high grade cartons. When a bright white surface with little printing or ink is desired the clay coated will be chosen. The patent coated is mostly used for the average carton. The manila-lined is a better bender at the score lines than the news-lined. The selection of a proper board and stock with the right thickness is important in making a good carton. Some products can readily use different surface board as well as different thicknesses, even though the carton is of the same dimension. A board of the proper thickness to protect the product should be chosen. Both the clay coated and patent coated run in thickness from 0.012 to 0.040. Some mills go as far as 0.050 although the 0.050 is not practical to run through the average printing press unless it is specially built for that purpose.

Standardization. Continuity of design and standardization of color scheme is being considered more and more by the manufacturer today. It establishes a trade mark color and can be easily recognized by the consumer as belonging to that particular manufacturer. There are many such examples on the market today and they have had marked success. For an example, the Taylor Instrument Co., manufacturers of the Tycos thermometer, have four brand names, namely, Tycos, Taylor, Advertising and Common. Each one of these brands has a different color scheme but carries the same general design for all brands. The Tycos brand, or first grade, has a cream over-all color. The Taylor brand, or second brand, has a light green over-all color; the Advertising brand, or third grade, a bright red over-all color; the Common brand, or fourth grade, a brown over-all color; All thermometers made under each of these brands are placed in their proper color cartons. The stock clerks, the dealers and the salesmen find this plan to work out successfully. Had the Taylor Instrument Co. used the same color scheme for all brands this would not have worked out so well. In considering standardization it is sometimes advisable to divide the brands or groups into different color schemes.

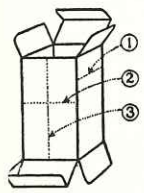
Circulation. Many manufacturers realize that they have a potential market for introducing a new product through one of their cartons. A booklet, folder or coupon, either attached to the carton or placed inside of it, reaches the consumer with no cost to the manufacturer. Briefly the carton has many possibilities in helping the manufacturer to greater sales. To make an attractive and sales-appeal carton requires the same attention and study as the product itself.

The carton selected for any product should serve four purposes: first, it should provide a suitable container for the product; second, it should protect the product; third, it should be of such form and shape as to make the product convenient to display and handle; and fourth, it should help sell the product. Not one of these four factors can be overlooked when selecting a suitable folding carton for any product. Ordering cartons of the wrong size often causes considerable waste. One means of overcoming this is to furnish the carton maker with a blueprint showing the size and shape required. A limited number of blank cartons can then be made up and tested on the filling and sealing machines to make sure they fit properly.

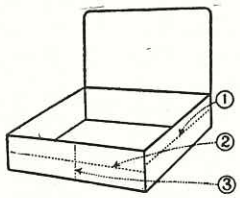
Specifications—Cartons and Display Containers

By EDWARD O. TINSLEY

A very frequent cause of error and misunderstanding in connection with folding boxes is the matter of giving the proper sequence of the dimensions. A simple convention governs the manner of presenting specifications. It is generally understood and accepted in the industry, and adherence to the practice shown below greatly facilitates mutual understanding.



CARTON

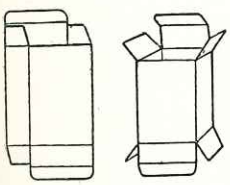


DISPLAY CONTAINER

Shown above are diagrams indicating by number, the sequence in which specifications are to be presented; thus, in the case of either carton or counter display container, the following will apply:

1st—Front to back dimension
2nd—Side to side dimension
3rd—Top to bottom dimension

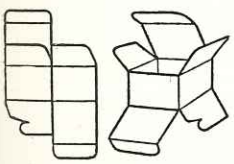
All measurements are understood to be from center of crease to center of crease.



Reverse Tuck Carton

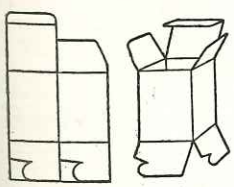
Popular style for low-priced candies, toilet and pharmaceutical articles, extracts and other products. Easily set up by hand, and may be packed automatically. Conveniently opened and closed for removal of contents, as used. Economical in manufacture because cartons interlock.

Reverse Tuck Carton with Arthur Locks



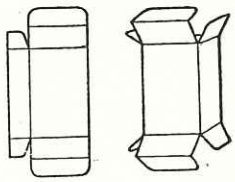
Same as reverse tuck, except bottom side flaps lock to prevent heavy contents from falling through bottom. Used principally for packing jars and bottles containing toilet preparations, medicines, condiments, and other heavy articles. Sometimes made with Arthur side locks both top and bottom, to hold flat round jars and similar objects securely.

Tuck Top, Arthur Lock Bottom Carton



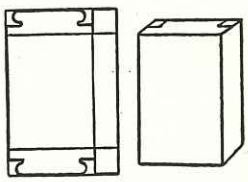
This style is used but seldom, and is primarily designed to hold very heavy jars. The double locking device at the bottom prevents the bottle or jar from breaking through. Satisfactory for ink bottles and cream jars.

Straight Tuck Carton



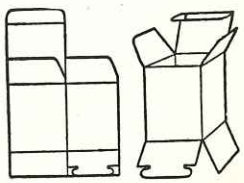
Has no advantage over the reverse tuck carton except that it is required for operation on some automatic machinery. Must be made with right and left glue seams to secure the economy of interlocking in manufacture. This is not desirable because on half of a run of cartons the rough edge of the glue seam shows at the front of the box.

Greenleaf Carton



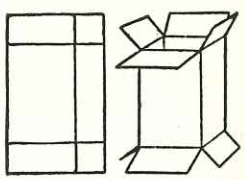
Locks at each end securely. Extensively used for packing dried fruits and other heavy or bulky food products; also as shelf containers holding individual packages in sales units.

Tuck Top, Greenleaf Bottom Carton



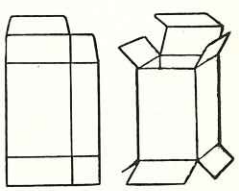
An adaptation of both styles, permitting the security of the greenleaf lock on the bottom and the convenience of the easily opened and closed tuck top. Used for the larger candy packages, heavy food products, shelf containers and many other purposes.

Seal End Carton



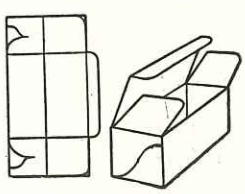
The most popular style carton for packing flour, cereals, sugar, salt, teas, coffees, spices and many other food products, soap powders and other cleansing preparations. Difficult to seal by hand; but packed and sealed on automatic machinery, it reaches the consumer with the contents untouched by human hands.

Seal Bottom, Tuck Top Carton

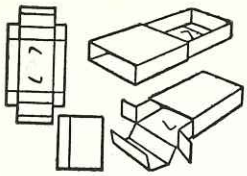


Handy as a pocket package for cough drops and small candies. Has the advantage of the solidly sealed bottom and the convenience of the easily opened and closed tuck top for the free use of the contents. Packed on automatic machinery. Not adapted to hand packing.

Colonial Lock Blank



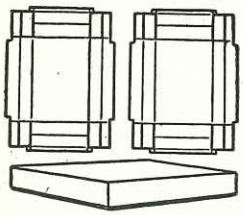
A folding blank, supported when set up by interlocking hooks and catches, requiring no gluing either by the box manufacturer or the user; very economical because of sheet layout. In universal use of biscuit and cracker manufacturers and is generally enclosed in a sealed, printed wrapper.



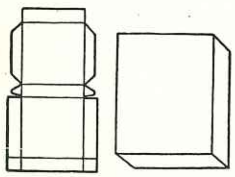
Tube and Slide Box

Consists of a folding blank variously contrived, to be inserted in a tube. Its two-piece construction makes it substantial enough to be carried without damage in the pocket of the consumer. It permits the easy removal of one article without spoilage of those remaining. It is extensively used for cigars and cigarettes.

Two-Piece Prospect Blank

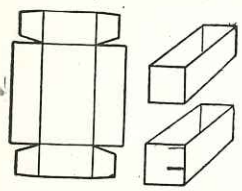


Two-piece box made up of blanks folded by hand. The ends overlap and are held against the side by friction. The cover may be made full or part depth and the blank glued at the side affords additional reinforcement, a recent development of the overlapping end blank in which an extra tab is provided as an extra protection at the corner. A similar reinforcement along the sides can be provided without the necessity of preliminary gluing. This style is the most recent development of hand assembled telescope box. It has many decided advantages in the textile industry, where it may substitute for a solid box.



Brightwood Blanks

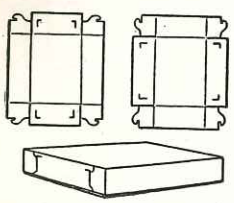
Brightwood machinery is installed in the user's plant for the sake of setting up and gluing two styles of blanks.



The one-piece blank is folded and automatically glued along the vertical panels by a carton forming machine, which automatically fills and seals it. It is necessary for the user to have sufficient production to gain the economies made possible by the automatic equipment.

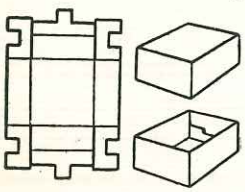
The two-piece style machine is fed blanks which are automatically glued into box and cover. The types are various—the cover may fit over the box to its full length, or only part way.

Two-Piece Hook Catch Blank



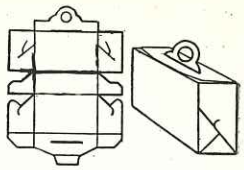
An economical style of telescope box, in which hook catches at the four corners hold the box and cover in place; very economical to manufacture, but difficult to set up. This style is not sufficiently durable to stand transportation or rough handling, but is a particularly suitable box for the clothing and florist industry.

Two-Piece Overlapping Bolt End Box



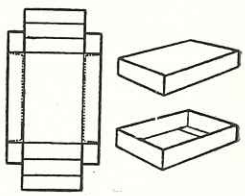
This box is very secure. It is used extensively for packing hardware and other heavy matter where the added strength of the full telescope feature is desirable.

The Satchel Package



A folding blank similar to the Colonial Lock Blank, which is held together by interlocking hooks and catches fitting together on the side panels. This box has the additional feature of a patented tongue and a handle which helps to secure the cover and economically substitutes for the tape formerly used. Commonly serves for packing confectionery, animal crackers, and the like.

Two-Piece Full Telescope Overlapping Ends Carton



A good substitute for a solid box—is economical to manufacture, easily set up by hand, and makes a very neat, substantial package. It is used very frequently for candies, also for dry goods, clothing, etc.

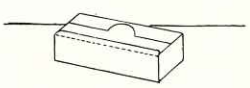
Pouring Spouts Applied to Seal End Cartons

There are a number of different devices applied to the top panel of an ordinary sealed carton to permit of easier access to the contents, but one of the most unusual is the one illustrated. The pouring spout is fashioned from the top flaps of the carton, and when properly operated by the housewife, is formed into a spout which may be opened and closed at will. Patented.

Cellophane Windows Applied to Ordinary Cartons

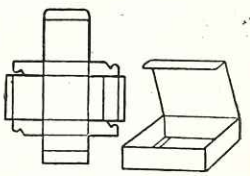
Manufacturers of candies, cakes and other products usually bought on sight are desirous of having their folding cartons made with a window to reveal the contents. Formerly, gelatine was used, but of recent years the product known as Cellophane has made rapid stride and is often used in its place.

Broad-Way Opener Box



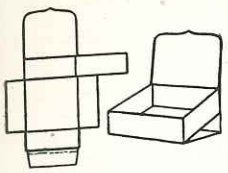
A new development in cartons that permits of inexpensive automatic filling through the ends of the cartons after which the ends are sealed and the box is opened the broad way, hence the name. This box may be also finished to form a counter display container without impairing the economical filling operation. Patented.

One-Piece Overlapping End and Front and Display Box



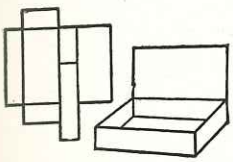
Economical to manufacture and extensively used for display purposes, this box has the added strength of the overlapping front which is not provided in the straight front box. The box can be made with panel-fold style display top, making possible the economy of printing on one side only.

Tinsley Counter Display Container



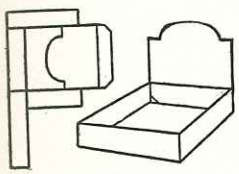
A box of patented design, so contrived that the cover, folding under, proves an easel support to display the goods. A remarkably successful type of display box because of its simplicity in construction, its ease in setting up, and because it has sufficient strength to act as a combination carrying and display box. It is susceptible to fine printing, required on one side only. The display panel is held at the proper angle by a supporting flap. Much of the universal success of this box is due to the fact that it is easily converted from a carrier to a display container by the retailer.

Climax Counter Display Container



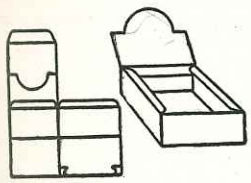
Very simple to set up. Lies flat on the counter. A protective cover is necessary, making the box more expensive than the panel-fold which has no cover. Requires printing and coating one side only. Display panel is equipped with supporting flap.

Panel-Fold Counter Display Container



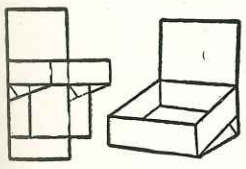
Simple in construction and setting up. Cover is so arranged as to make an attractive display panel. Protective cover is optional. Stands flat on the counter. Requires printing and coating one side only.

Panel-Fold Container with Lock Bottom



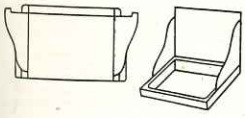
Similar in general appearance, to the panel-fold, except that the locking device is on the bottom. This makes possible gluing of box on automatic machinery, with resultant speed and economy.

Simplex Counter Display Container



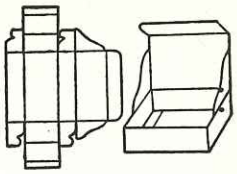
Simple to set up. Special easel feature permits tilting at different angles. Principal feature is simplicity with which dealer may display the goods at an angle. Protective cover is necessary. Requires printing and coating one side only. Display panel is equipped with supporting flap.

Five Panel Counter Display Container



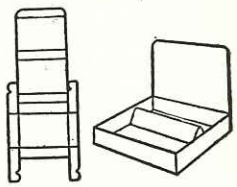
Old established style still in limited use. Requires printing two sides and coating two sides. Somewhat difficult to fill, since the packer must insert goods from side. Lies flat on the counter. Display panel is equipped with supporting flaps.

Four Panel Counter Display Container



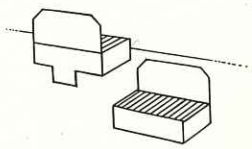
An old style, inexpensive but low in display value and strength, infrequently used today. May be made with or without side wings.

Cavanagh Counter Display Container



Simple to set up. Requires coating on one side of board only. Is a one-piece blank. Prints all display panels in one operation. Displays contents attractively when set up on counter. Particularly adaptable for light articles. Can be used for heavy articles if tilting feature is omitted.

Tilting Dummy Display

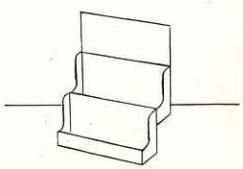


Excellent for perishable articles, like cheese and butter. Shows replicas of the individual packages, but does not hold any goods. Automatically set up by dealer as he places in the side tucks, an economical and attractive display.

Rose Display Container

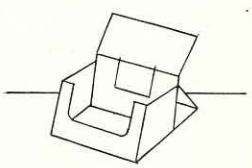
A very effective blank and one of the leading types of display containers. The cover section forms an easel, and is very readily transformed from a shipping box to a tilted display box by the storekeeper. It does, however, require printing on both sides of the board.

Skyscraper (Broken Back)



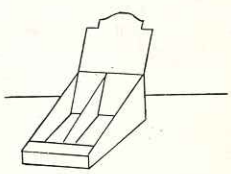
A recent addition to the field of counter display containers which displays contents in two tiers and stays on the counter in an upright or "skyscraper" manner rather than the familiar long horizontal shape. Some are made with an easel in the rear to hold the second tier in a raised position. Patented.

Darragh Display Container



Another recent addition to the display container field, the main feature of which is that the contents when loaded for shipment are in an upright rectangular position, but when the box is set up for display, the contents are thrown to a stacked position and make a very attractive appearance on the counter. Also, the box is so constructed that the display panel is held in a certain position more or less rigidly and does not flop forward or backward as do so many containers.

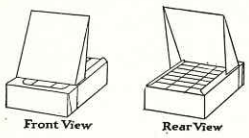
Gairway Display Container



An effective new type of display container in which the individual contents are packed in a staggered manner for better dis-

play. Particularly useful for fragile packages put out is glassine bags. Very easy for the dealer to sell, and the contents are kept in tidy position while on the display counters. Patented.

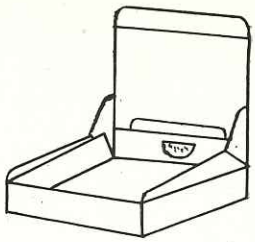
Display Dispenser



A new departure in counter display containers. Instead of the conventional type of display container which shows goods on display with the display panel in the rear, this container has the display panel part way back. In front of the display panel appear several of the articles on display (see left illustration).

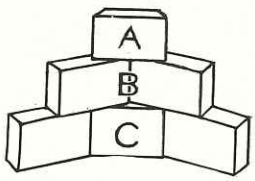
The bulk of the product is packed *behind* the display panel (see right illustration) making for convenience of the store clerk. The unsightly appearance of half-filled containers is avoided. This container is always orderly until the last package is sold.

Brooks' Display Container



A counter display box complete in itself; that is, no protective cover is necessary. The box is equipped with a tab at the rear of the goods which the dealer elevates and secures in the rear panel. This throws the goods on display to a desirable angle.

Giant Pyramid Window Display Dummy



An effective window display in pyramidal form made up of three folding boxes: A, B and C joined together. Distributed in knocked-down form. Easily erected and very stable. The whole unit may be moved from one position in the show window to another without disturbing its form.

Uses of the Paraffined Carton

By M. DALE OGDEN

PARAFFINED containers are being used extensively every year for packaging butter, ice cream, oleomargarine, meat products, nuts, etc., because of a definite service that waxed cartons perform for these and like products. An outstanding example is shown by the increased sale of print butter in paraffined cartons. To one not conversant or directly concerned with the uses of the paraffined container, the thought that first comes to mind is of the butter and ice cream cartons. It is true that the dairy industry represents the principal market for paraffined containers, but it is likewise true that many wax-treated containers are being used every year for various other products.

Literally, the paraffined carton is still in its "teens." It was about seventeen years ago that a waxed carton, designed to be used as a butter container, first came to notice. This was made of manila board and plain type adorned its sides and ends, proclaiming a brand name and description of contents. Since this commendable advance, though comparatively crude method of packaging butter prints, rapid changes and improvements have been made in the process of manufacturing the paraffined carton.

THE first and foremost function of a paraffined container is to afford moisture-proof protection. While maintaining and protecting the moist product which it contains, the penetration of moisture through the carton walls from the exterior is also prevented by its use. The packaging of cheese represents an example of the former; the storing of products in a moist atmosphere, such as iced refrigerators, an example of the latter. The paraffined carton performs another function in its ability to protect contents against contamination by foreign odors. Butter, lard, oleomargarine and like products have an affinity for taking up odors from vegetables, fish, and so on, that may be in close proximity. We might say, then, it is one of the virtues of the paraffined container to maintain the original sweetness and purity of a product as when it was first produced. These main features, plus the sanitary handling that is afforded from exposure to dirt, etc., put the paraffined container in position to perform a valuable service for the group of products to which it is adapted.

The wax treatment that was given the first paraffined carton was secured by applying hot paraffine to the surfaces of the container, then cooling by a blast of air. The same process is still followed with the use of improved machinery. This "hot wax" treatment may be recognized by the dull finish it gives to the container.

In later years the "hot wax" treatment has been replaced to a considerable degree by the popularity and attractiveness of what is termed as the "high gloss" finish, or "cold wax" treatment. This particular treatment is accomplished by the quick immersion of cartons, printed and cut, into a bath of hot paraffine which is maintained at a fixed temperature. Following this, they are immediately chilled in a bath of ice-cold, pure, flowing water. This process not only makes for an improved appearance of the carton itself compared with the old-style, dull-finished job, but it likewise affords speedier production. The "high gloss" paraffined carton gains its name from the bright, reflecting, paraffined surfaces of the container. This method of waxing cartons after they have been cut insures paraffine being applied to the edges as well as surfaces of the carton and prevents moisture being absorbed by the carton board in any way. This is mentioned to illustrate an improvement in manufacture over a process once followed in cutting and scoring cartons after they had been printed and paraffined.

WITHIN the last three years a new process of paraffining containers has come into use which is known as the wax saturation process. This is a treatment adaptable for pure solid sulphite carton board. The paraffine is impregnated into the fibres of the carton stock, leaving no wax on the surface. The hot wax and cold wax treatments just described are both methods of applying paraffine to the surfaces. The printed design of a package is not interfered with by the wax saturation treatment; rather it is enhanced since a certain transparency to the carton stock is obtained. A product is given the same protection against moisture and other exterior elements by this process as in the hot wax or cold wax treatments. There is an additional factor in that the container may be handled without any possibility of any exterior paraffine being rubbed off on to one's clothing, or being scraped off in contact with the product.

A few words regarding the gluing of paraffined cartons. The first paraffined containers were waxed "in the flat" and remained so until they were wrapped about the print of butter, brick of ice cream, or whatever product they were intended to protect. Later it became desirable, as well as necessary, to produce a paraffined container that was glued along one side and with flaps that would tuck in at both ends. Several years of patient research and experiment were required before a dependable machine was developed that would perform the operation of folding and gluing a paraffined carton. The problem encountered lies in the fact that glue will not adhere to a paraffined surface. So that it was necessary to remove the paraffine from certain portions of the container preliminary to a gluing operation. A machine was finally perfected whereby paraffine is removed on certain surfaces of the carton, water-proof glue applied and the carton folded into shape so that the glued surfaces might adhere to each other. Thus one of the biggest problems in the manufacture of glued, paraffined cartons was overcome with a considerable saving in time and labor for carton users.

With the widespread popularity of containers with a paraffined treatment, together with the many new uses to which they are being applied, it is natural that the past sixteen years have witnessed rapid improvement and refinement. These many changes are apparent in the present use of colorful, attractive designs, improved type-composition and the adoption of certain types and sizes of packages best suited to the consumers' requirements. The grade of carton board has also been subjected to improvement. Where cheap manila stock was once used (with doubtful guarantee of sanitation), we find today the greater percentage of paraffined containers made up of pure bleached sulphite lined manila board, ideally adapted both from the standpoint of strength as well as sanitation for handling the most delicate foodstuffs.

Tight Wrapped Packages

THE tight wrapped package is now a standard type of package with many manufacturers and packers of food and grocery products. This type of package was first adopted a number of years ago by some of the cereal manufacturers, where its greatest advantage was in keeping the weevil from getting into the contents. This style of package proved so satisfactory for cereals that it has been adopted for use with many other products, such as flour, soap powders, salt, coffee, etc.

Various types of cartons with inside bags or liners can be used with the tight wrapped package, as well as different types of opening devices. In the salt industry the tight wrapped package is now being used by many of the leaders, and one of the most satisfactory salt packages is a carton made of asphalt lined board which is tight wrapped on the outside. For coffee, wax or parchment paper liners are generally used on the inside of the carton and the cartons are tight wrapped on the outside. For flour, the regular chipboard carton is used and some of the packers have these made with a blue lining on the inside which gives a whiter color to the flour. Various combinations of cartons, liners, and labels can be used to insure the product getting to the consumer in the best possible condition.

Another advantage of the tight wrapped package is for the packers or manufacturers who pack private label brands for different customers. If he uses the tight wrapped package he can use the same carton and merely have different labels for the different brands. This means a saving as it is not necessary to carry a number of different printed cartons on hand. With the tight wrapped package various types of labels giving different styles of end folds can be used to suit the conditions. Some labels are die-cut so that each end flap of the label is glued down separately. Others are rectangular, making a gusset fold on the end.

The machines for tight wrapping packages are built in different styles and types to suit the conditions. There is a semi-automatic machine which is hand fed and adjustable for different sizes and has a production of 10 to 15 tight wrapped packages per minute. Then there is the fully automatic machine usually built for one size package to be wrapped and has a production of 60 to 70 tight wrapped packages per minute. One of the principal advantages of the fully automatic tight wrapping machine is the great saving in labor. In one of the large cereal mills there were employed 75 to 100 girls hand wrapping packages. Two automatic machines and five people replaced this hand labor and in addition the customer obtained a better and tighter package.

With the tight wrapped package the plain unprinted cartons are filled and sealed in the regular way, there

being a number of different makes of semi-automatic and full automatic carton filling and sealing machines on the market. After the carton is filled and sealed it is fed into the tight wrapping machines which automatically feeds the paper labels as the cartons entering the wrapping machine glues the labels all over on the blank side with a thin coating of adhesive and wraps it tightly around the filled carton, making a perfectly tight sealed, non-sifting, weevil-proof, and attractive package. This package costs practically the same or possibly a little more than the printed cartons, but there are so many advantages in the tight-wrapped package which more than offset any slight additional cost.

Some of these advantages are: Better appearance of the package, stimulating sales. Printed or lithographed colors show up to better advantage on paper labels than when printed directly on cardboard.

Greater strength. The wrapper glued tightly to the carton strengthens the package, especially at the corners where there is generous overlapping of the paper.

Better preservation of contents. The contents of the package are fully protected against dust, odors, weevils, etc., and there is no loss from leakage or sifting.

Tin Containers

PROGRESS in the science of chemistry and bacteriology, advancement in the methods of manufacturing cans economically and modern developments in the art of lithographing tin plate have all contributed to bring the tin container into its own.

Gone are the old prejudices against eating food from cans. And what food product is not available in cans? Milk, fruits, vegetables, fish, meat, olive oil and so on *ad infinitum*. For hundreds of products other than foods, tin containers have been adopted as standard because of the protection afforded to contents because of their handling, shipping and wearing qualities, and because of their low cost as compared with containers made of many other materials. Here may be listed oil, grease, tobacco, talcum powder, aspirin tablets, tennis balls, shoe polish, fly spray and hundreds of others.

It can be truthfully said that anything that needs a container can be put into a tin can, but the difficulty very often found is that the product may not be able to stand the cost of a container. The result is that many producers turn from the use of tin to other material, which is not as expensive, and, in their opinion, serves the purpose. Except in the industries, where, through experience certain standards have been established, the type of containers used depends entirely on what the producer thinks necessary. It may be a can with both ends double-seamed on; it may be a friction or screw top and perhaps with some sort of nozzle or spout, and this can be kept on almost indefinitely if it were intended to enumerate the multitude of cans used in a particular industry. In each industry, because of necessity, where any considerable volume is to be packed, mechanical genius has developed particular equipment that will handle and accommodate the requirements of that particular trade. The coffee roasters, in particular, have at their disposal complete weighing and filling units, which greatly simplify their problem of weighing and filling their cans, likewise the tea packers, spice grinders and other industries. Each industry has its particular requirements, and to fill these requirements suitable can manufacturing equipment has been invented.

EXPERIENCE has taught the value of the tin can because of its strength and protection. A metal container is able to withstand the usual transportation usage and still not add any appreciable weight that will eat up freight charges. But in addition to strength and protection, the metal container offers two more important advantages; that is, its economy in handling, inasmuch as it eliminates, to a great extent, the spoilage which usually attends other materials, but its greatest value is in its ability to lithograph customer's trade mark or label identification. This is of great assistance because the label can never be destroyed and always presents a bright appearance and it remains an advertisement for the producer so long as it remains unopened and even after that.

Few buyers realize the importance of advertising secured through lithography, but gradually the true value is being realized more and more and can buyers are specifying their requirements for lithographed tin cans. Possibly this one feature alone is more than equal to the slight increase in cost necessary to pay for the tin can over other materials. But buyers should exercise certain care in the matter of buying lithography. Lithography in itself is an art and science, and they should be careful to have their ideas capably interpreted by experienced artists and then have a reproduction to metal made by a company whose experience has proved their ability to properly reproduce label combinations. Like everything else there is a big difference in production of tin cans, in so far as quality is concerned, and like many other things, some people are inclined to consider it only from a price angle rather than a quality viewpoint. Half of a buyer's can requirements is the company behind the production of his containers, meaning the earnestness and care with which they apply themselves to the execution of all orders and that intangible something, which may be much or little, called service. It is, at times, very satisfying to know that even though the containers themselves are satisfactory, there is some one in an organization whom they are sure can be of some assistance in helping them plan their package.

Set-up Paper Boxes

By FRANK S. RECORDS

ALL packages possess certain general characteristics but there are certain advantages possessed by the set-up box and certain uses for which it is especially adaptable.

Set-up boxes create an attractive and expensive atmosphere. They influence buying habits. Set-up packing is "quality packing." Many hand-made boxes are works of art. They are associated with the luxuries of life—gifts, candy, perfume, etc.

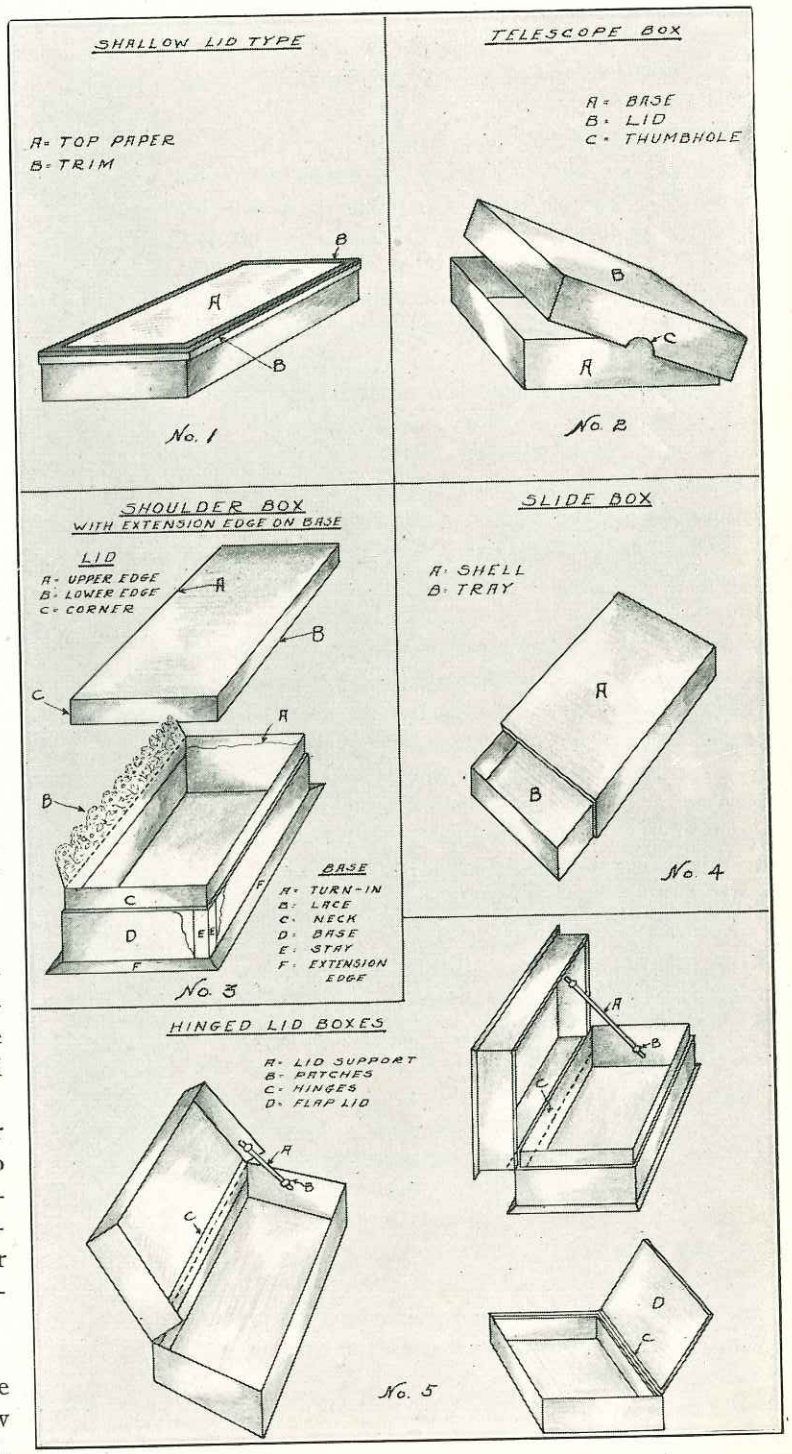
Set-up boxes are durable and strong. Where the content is not consumed at once, as with candy, stationery, etc., the boxes keep the content in better condition. Combination packages are made possible through the use of the set-up box wherein can be packed several dissimilar articles. Such packages can be used to introduce new products or overcome sales resistance of one of the products in the combination. The set-up box is readily and easily opened by the consumer. Only the removal of the lid is necessary to make the contents ready for use or examination. Manufacturers who use set-up boxes are able to meet seasonal and style changes quickly and at small expense.

Set-up boxes are especially adapted for packing the following:

a. Unique irregular outlines, curved surfaces, hexagon octagon, etc., where pasting must be done.
b. Huge-sized or bulky articles that are too large for the folding box.
c. Very tiny articles that are too small or too shallow for folding boxes—jewelry, hairpins, etc.
d. Fragile articles where hand packing is necessary to prevent breakage, or in mailing boxes.
e. Expensive articles, vanities, etc.
f. Where interior packing or a platform is necessary for display purposes or shipping purposes; manicuring sets, silverware, perfume bottles, etc., or any product with an unusual outline.

No machinery is needed in closing the box, or in setting it up. The user does not have to do anything except fill it. Set-up boxes are especially adaptable to the manufacturer whose output is small or varies greatly in size, quantity or combination, or is subjected to seasonal variation.

IN the manufacture of a simple, white glaze finished box, with white lining and a shallow lid 16 major processing operations are required, to say nothing of the sub-division of some of these major operations. Some of these operations have alternates—a choice between two or more methods of accomplishing the same result. The determination of which process is best in a given case depends on several factors, such as the size of the box, the quantity, the material; on the other hand, the selection of materials may depend on the process to be used. All these fac-



Types of set-up paper boxes and their construction

tors are further complicated when the box has added features or variation—printing, flies, interior parts, labels, extension edges, etc.

While it is possible to have intimate knowledge of these factory operations and to specify them clearly, such knowledge is seldom available outside of a paper box organization. But in the matter of materials, it is quite impossible to specify in terms that may not be followed with widely varying results. The basic material from which paper boxes are made is pasteboard. This material has innumerable subdivisions of quality and finish, and new variations are frequently being developed. To name several, there are chipboard, both plain and bender, newsboard, jute board, wood board, and four or five combinations of these. They may be lined in various ways, such as news sheet, news vat, book sheet, book vat, wood white vat, clay coated, glazed lined in white or colors, etc. These have various finishes, rough, medium, smooth, and very smooth. These finishes, in general, are determined by the bulk per pound and are designated by numbers. But the numbers permit of considerable variations, as No. 1 runs smoother at times than it does at others, No. 3 merges into No. 4. A given "number" in chipboard will not be as smooth as the same number in news board. The No. 3 of some mills is as smooth as the No. 4 of some others. The very nature of the stock makes it impossible to specify these details to a nicety.

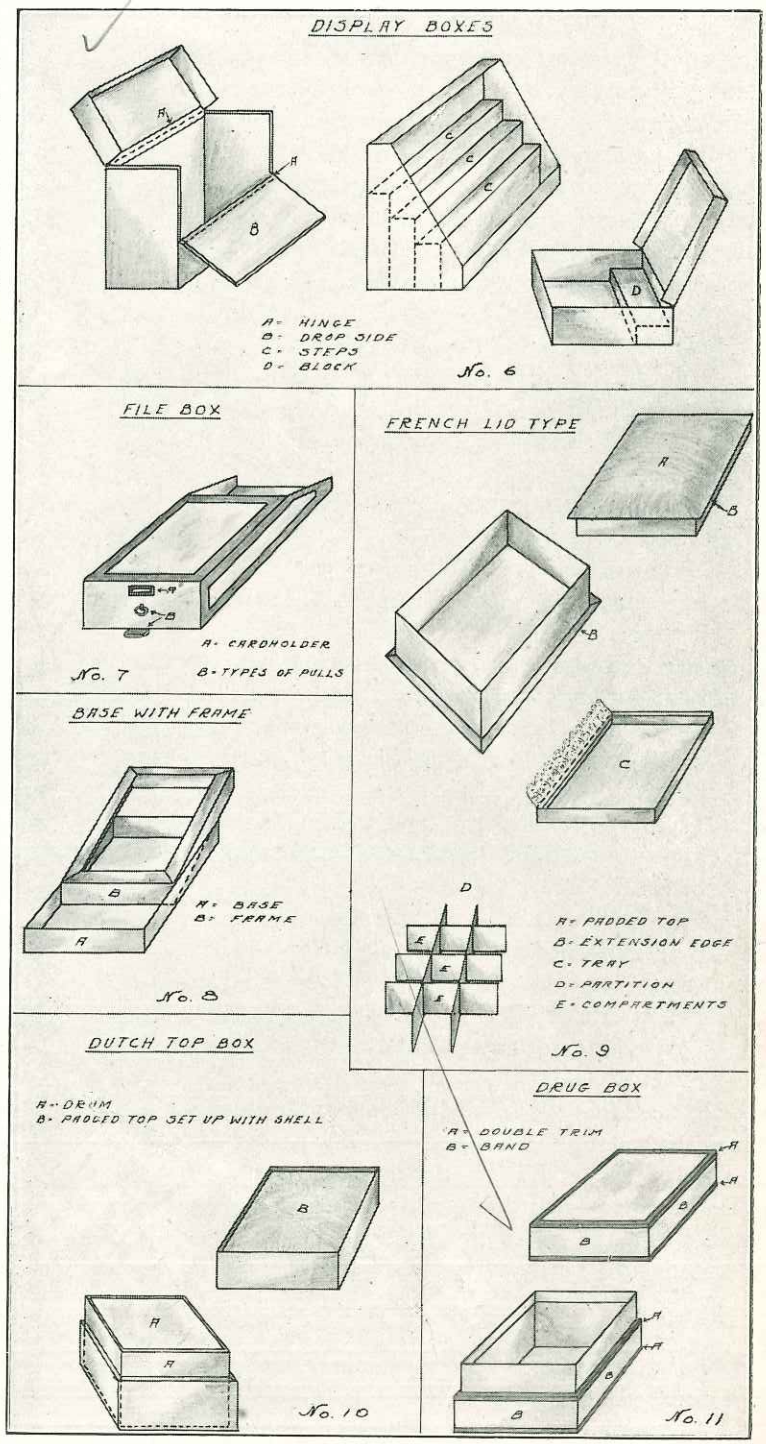
The board generally used in set-up boxes is made to conform to a peculiar standard. That standard is always a 50-pound bundle. Hence, the thickness of the sheet is determined by the number of sheets of a size per bundle and this is known as the "count." But count means nothing unless size of the sheet is stated with it. In short, count 50—25 in. x 40 in. is not the same thickness as count 50—20 in. x 30 in. The actual, or caliper, thickness, therefore, is determined by the kind of board, the finish on it and the size of sheet and count.

Similarly, the finishing papers run through a wide gamut of qualities under the same designation. For example, such plain papers as white glazed or white embossed moire can vary in weight, color tone, finish and, in the case of the latter, effectiveness of embossing. Unless the name of a paper manufacturer is mentioned, along with his particular designation for a certain item in his line, there can be no exact understanding of the specifications.

These notations pertain to the simplest kind of box and take no account of the maze of confusion involved in the specifications for more complicated structures, nor the variations in refinement of finish.

When a set of specifications is presented to a box manufacturer, he must, in his own mind, determine all these factors accurately before he can set out to compile an estimate. Under these conditions, how is it possible for any two manufacturers using the same set of specifications to determine on exactly the same details? Hence, how can bids taken solely on specifications be comparable? The low bidder may contemplate a box wholly unsuited to the buyer's purpose; the higher bidder may very possibly be the one whose product will most economically serve the buyer.

The supplying of paper boxes is largely a service. The best results and the most economical, all things considered, are obtained by close cooperation between the buyer and the paper box manufacturer. The con-



Types of set-up paper boxes and their construction

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stant interchange of ideas is necessary to a proper harmony of ideals and understanding.

A properly prepared box is of great assistance in the sale of any product. It is one of the least expensive and at the same time one of the most permanent and direct forms of advertising. An attractive package or paper box from which a consumer uses the product is a daily advertisement of that product. Such advertisements in thousands of homes are highly important. When a container can be used for other purposes after it has been emptied, it becomes an effective advertisement of the company's products for months and years. Numerous manufacturers are beginning to realize the value of this medium and to select carefully the containers for their products.

A container with sales value must have the same features as a good advertisement. It must be noticed, remembered, and the text on the box must be read, believed and acted upon. In addition to these general points relative to a good advertisement there are other factors which contribute to the sales value of a container. They are size, shape, convenience and appropriateness.

THE size of the box depends upon the commodity which it is to contain. It is important, however, to determine the most economical unit in which to distribute any product. The shape is determined generally by the convenience in handling it and by the nature of the product to be placed in the package. The shape may be an important attention-securing or identifying factor. The convenience of a box when the consumers keep the product in it is of much significance. The design and text matter are also of value as advertising material. It is necessary to test these elements for color, text and layout. The test for layout is a test of the attention value and the general appropriateness of the label.

A scientific study of the proper type of paper boxes to be used should assist the paper box manufacturer to serve his customers, and should aid the manufacturer who uses the boxes to sell his products.

Fibre and Paper Cans

By C. T. SIMPSON

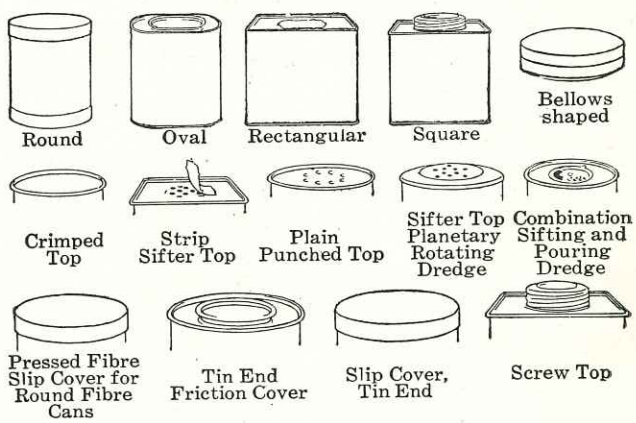
FIBRE cans are now made in such a great variety of sizes and closures that they must be considered in the packaging of a large number of products.

All fibre, spirally rolled cans are now made from one-half inch to seven and a half inches in diameter, and there is practically no limit to the height; any color may be used on the top and bottom cap to match the color of the label; the can may be shouldered at each end so that the top and bottom cap will be flush with the bodies and make it simple for labeling on automatic machines. Spirally wound paper cans are also made in a larger variety of walls than ever before. It is possible to buy the chipboard can, both plain and paraffined, for the simpler forms of packing; also the chipboard can be lined with either glassine or parchment paper. Then, for the more moisture-proof cans, the chipboard can may be used with asphaltum for a liner. This can, with an asphaltum-lined cover and shouldered so that the label fits snugly, is a very good can for keeping out moisture and will compare favorably with the better grade of tin cans. Cans made of Bedford manila are very attractive looking and durable.

There are, also, paper cans that are carried in stock for grocery stores, ice cream stores, drug stores and various other stores that sell in bulk. This type of can has made rapid strides in late years and is fast replacing wooden plate and ice cream folding packages. This type of can is usually carried by the paper jobber in the following sizes: one-quarter and one-half pint, one pint, one quart, and half-gallon and gallon. They can also be had with printed tops and sides, made to order for very little extra cost, which carry special advertising value.

A new type of can that is now on the market is an aluminum-foil lined can for baking powder and is said to have proved a success. Tin-foil cans have been on the market for some time but the aluminum-foil lined can is new.

There has also appeared on the market a new style of can for marshmallows. This is a spiral can, rolled with an outside ply of pure white sulphite and printed in colors after rolling. After the marshmallows are put into the



can and the caps placed in each end, the completed can is given a bath of paraffine. The white sulphite board gives a beautiful, glossy surface and the can is said to keep the marshmallows in excellent condition.

The bird seed folding box and round spiral paper can are being replaced by one well-known bird seed concern with a square, convolute, round-cornered can with a tin top and bottom, the top having a metal pouring spout.

Many manufacturers of other products should utilize this idea as it is a very successful package.

The convolute fibre can is taking the place of the spiral can by users who want a good, strong can and are willing to pay more. This type of can is made in various shapes, the more popular ones being round, square with round corners and oval. Five types of walls supply practically all the wants of users. These are as follows: (1) Plain chipboard, (2) imitation Bedford manila, (3) genuine Bedford manila, (4) Bedford and chip combined with asphaltum and (5) glassine-lined chipboard. There are various other kinds of material used but the bulk of the cans are made out of one of these five. The method of manufacture in the winding insures a strong, stiff can as the paper gets a good coat of glue on one side which is allowed to soak into the board for a little time before the paper reaches the winding mandrel. The can comes off the winding mandrel in a soft condition but after drying is very stiff. For packaging ordinary products that are dry, the chipboard is usually satisfactory but for oily products the convolutely rolled can of genuine Bedford or glassine-lined chip is recommended.

For a moisture-proof can the combined chip and Bedford with asphaltum is the best. This type can be made with various closures but the round style is the only one that is used with paper ends to any extent. On the square, round-cornered can it is possible to have a large variety of tin closures, among them being the following:

Plain Slip Cover—This is just an ordinary tin cover that slips over the top of the can after the contents have been packed. The can is usually labeled to keep the cover on. The top can be plain or the user's name can be embossed on the top.

Friction Top—This closure is very popular as the can is filled from the top, and the friction plug is forced into place after the filling operation. A can of this style has the advantage of coming to the user already labeled.

Crimped-On Top—This can is filled from the bottom. The can manufacturer furnishes a crimping machine to the user for the purpose of crimping on the bottom after the can has been filled.

There are also various types of sifter tops that are used considerably. These sifter tops can be put into either a slip cover style or a crimped-on top.

For certain products nickeline tops are in demand and, although they are higher in price than tin ends, they make a more attractive appearance especially with a label of good color and design. Nickeline top cans are closed and opened by just a turn of the hand.

The paper can industry has made a great improvement in the last few years, and before any product is put on the market, the value of packing in a paper can should be seriously considered from the standpoint of cost as well as from other advantages obtainable in such containers.

Fibre Pails and Drums

FIBRE pails are used extensively by the manufacturers of candy, bakers' supplies and bulk drugs, sugar grinders, spice grinders, coffee roasters, salted nut roasters, etc.

The value of the fibre drum for the bulk shipment of food products, dyes, colors and chemicals has been demonstrated as far as the protection of the contents is concerned, and because fibre drums do not warp, shrink or dry out, the protection continues while products are in manufacturer's warehouse, in transit and also in the consumer's hands.

The use of fibre drums has also been developed for the shipment of lard, petrolatum, transmission greases, cup greases, oil silks and similar semi-solids that have an oil base. They have also been developed for tooth paste, adhesive paste, marshmallow whip and other products of a semi-solid or plastic nature which have a water base. Fibre drums are used for their cleanliness which is desirable for food products and chemicals. They are also used for their convenience in handling and for the full open top which allows free access to the contents.

In addition to the protection which they give their contents and the convenience with which they are handled, fibre drums are being used more and more for the advertising value of their exterior. Being straight-sided and smooth, and having a naturally fine appearance, they lend themselves to attractive display labels and they enable the shipper of products in bulk to apply the same merchandising principle to the bulk shipment that has been so successfully demonstrated to be profitable in the case of retail packaging.

Specialty Paper Bags

By GORDON H. FRIEND

TEN or fifteen years ago it would have been quite all right to have said that this is an era of package merchandising, and let it go at that. However, today we must add that all-important and significant word, "economical." Competition and the considerable shrinkage in profit margins no longer permits the producer or manufacturer to allow the past liberal percentages for package costs. Instead, while expecting the same sales appeal and individuality as before in his display and shipping packages, he is also demanding with equal emphasis that they be cheap and show a more reasonable percentage of his total costs than heretofore. As paper is the cheapest and most important raw material going into the manufacture of containers, packages made from it are now receiving more consideration than ever before, and paper bags, the first of all paper containers, are getting the lion's share.

To the average individual the paper bag generally means only the ordinary grocery sack. Few people realize that this industry is no longer entirely expressed

by the simple conversion of wrapping paper into paper bags in mass production, but on the other hand this business is now being made up of a number of specialists who are really doing some wonderful things with paper bags. It is only recently that producers of sales and trade mark packages, as a whole, have become acquainted with the enormous strides made by these specialty bag manufacturers in the production of ideal sales containers at extraordinarily economical prices.

High speed machinery which has now made the grocery sack the cheapest container ever produced has also been made adaptable for the manufacture of the finest grades of specialty bags. The resulting low costs have opened up vast opportunities for the possible use of bags which heretofore were not even thought of. At the same time great strides have been made in the manufacture of packages of unusual construction. In the past, all bags were built up from a single wall of paper, or two at the most. Today millions of bags three, four, five and even six walls are being manufactured. These containers possess such unusual strength and durability that they are rapidly taking the place of burlap and cotton sacking. They are in addition extremely cheap as compared to other materials and also can be made absolutely sift-proof by specially pasted, sewed, stitched or stapled bottoms. Fertilizers, insecticides, cement, sugar and many other products are at this time being packed and shipped in bags of this kind.

THE most important development of recent years in the production of specialty paper bags has been in the printing. Just as high speed machinery has been perfected for the manufacture of specialty bags, so have similar developments taken place in the printing of these bags. The last few years has witnessed the introduction of highly efficient and economical rotary printing presses capable of reproducing any type of a printed design on specialty bags in multicolors from the heavy splashy all-over effects, to the delicate tints and Ben Days. Printed effects which a few years ago could only have been reproduced on expensive packages can now be secured on specialty bags at amazingly low prices.

The economy of paper bags in price and in labor saving, storing, shipping and many other ways, has always been admitted. To these advantages bag specialists have now been able to give to paper bag containers the attractiveness, individuality, and sales appeal equal to that of any other printed container, and, in addition, a strength and durability.

There is another great advantage which the user and manufacturer of specialty paper bags enjoys. He has at his command, and for his selection, all papers of every type and description. His choice only depends upon his requirements. If he desires a moisture-proof package—an oilproof container—suitable papers are procurable. As bags are now made of more than one paper thickness, the consumer may have a combination of special requirements. For instance, for the outside of his container he can secure the very finest of embossed, tinted or coated papers; and on the inside, kraft, waxed paper, glassine, vegetable parchment or other stocks according to his actual needs.

Specialty bags of today therefore possess all the necessary qualities making up successful sales and trade mark containers. Only recently the Cellophane face bag has been perfected which enables the consumer to see the contents within the package, thus adding the final touch to the many advantages of the specialty bag as a sales package. In many lines specialty bags are now dominating factors as package containers and as economy of packaging becomes more and more the keynote of container efficiency, so will greater opportunities present themselves for the use of the specialty printed paper bag.

Textile Bags

THE term "textile bags," as the name implies, refers to bags made from textile or woven cloth of one kind or another and is used to distinguish such bags from bags made of paper. Textile bags may be made from any kind of woven material, although practically all are made from cotton or burlap goods.

Textile bags are peculiarly appropriate for packaging certain commodities, just as bottles, collapsible metal tubes, cans and cartons have fields they are particularly fitted by their nature to serve. Textile bags are particularly adapted for use as containers for powder and granular products, such as flour, sugar, table salt, ice cream salt, soap chips and powder, and various chemicals. They are also used to advantage in packing vegetables such as beans, rice, potatoes and onions.

The use of cotton and burlap bags for packing potatoes for retail sales has increased tremendously during the past two or three years. Potatoes were formerly received by the grocers in bulk in burlap sacks. He sold them to his customers in paper bags by the peck or pound. The method used today to an increasing extent is the packing of 15 to 25 lb. of selected potatoes in small cotton or burlap bags. Potatoes so packed not only bring a premium but also enable the groceryman to wait on his trade more quickly. He simply picks up a bag of potatoes and hands it to his customer and does not have to go through the slow process of filling the paper bag with potatoes and weighing it. He can serve more customers.

Advertising value: Brands, trade marks, and other advertising matter may be printed on textile bags in various bright colors in a similar manner as is done on other types of containers. Art departments are maintained by large and more progressive textile bag manufacturers where brands are designed without charge to the customer. Poster effects are most striking on textile bags and with the various contrasting colors available in up-to-date bag designing and printing, attractive effects are obtained.

Textile bags light in weight, yet strong: Textile bags are light in weight compared with most containers, and this means a saving in tare weight on every shipment, thus effecting a permanent saving in freight charges. In spite of the light weight they are amply strong to carry the contents safely to their ultimate destination. They stand the strain under the usual shipping conditions encountered. They do not break or fall to pieces if by chance they fall or are dropped. Research departments are maintained by textile bag manufacturers where tests are constantly being made to determine the suitability of different types of bags for carrying various commodities. Bags are designed for the particular purpose for which they are to be used, and tests are made that simulate the actual conditions the bags must undergo.

Textile bags flexible: Due to the soft cloth from which bags are made they are flexible and adapt their shape to the place in which they are stored. They pack together compactly, saving valuable storage space. The maximum amount of goods may be stored in the minimum amount of space. Empty bags require little storage space as they are bundled in compressed bales. The flexibility of bags makes them easy to handle and they are preferred by shippers and carriers for this reason. Textile bags are flexible in another sense in that they can be made any size desired. Individual shapes and varying sizes, without number, are available. This feature enables a manufacturer to get a distinctive package for his product.

Textile bags have utility after being emptied: Cotton bags when used as containers for retail packages appeal to housewives as the sturdy piece of white cotton cloth of which the bags are made may be used as a dish towel, dust cloth, or vegetable bag. Burlap bags always have a good salvage value as they can be used again for packing commodities of low cost not requiring new containers.

Bag Sealing

SUCH products as ore, cement, lime, cereals, coffee, drugs and a host of other products are being successfully shipped throughout the country in paper bags.

The paper bags are made in many different ways:

1. The multi-wall bag
2. The lined bag
3. The valve gag
4. The glassine bag

—and a number of others.

They are sealed either by sewing with special stitching machines or by tying with heavy cord or by folding and tapeing, and also by lapping and glueing. They can also be stapled. At present the lapping and glueing method seems to make a perfectly airtight package.

Machines are made that will automatically fill the bag and then close it under some one of the above-mentioned methods.

It is advisable, when using bags, to be careful to see that the product packed in them is not affected by any chemical ingredient of the paper.

If an airtight package is desired, the tapeing or glueing method should be used and the bag closed immediately after being filled.

Collapsible Tubes

COLLAPSIBLE tubes have been made of tin, lead and laminated metals for many years; that is, tin on the inside, next to a layer of lead, and tin on the outside. The usual procedure is to use a lead tube for cements, adhesives, certain soaps, oils; and for purposes of a cheap package, it has no competition. Not so much in this country, but in Germany is the tin-coated or laminated tube used. Our drug laws prohibit a content of more than twelve per cent lead in a package that is used for food or for certain pharmaceutical uses, and this percentage is also maintained in France.

The laminated or tin-coated tube is not used to a great extent, primarily because the scrap content is not an economic one. The scrap contains tin and lead and is not very marketable; the necessity for tin on the inside and outside, with lead in the center, makes the tubes excessively heavy, increasing the shipping cost, and the American market has been trained to standardize on tin.

While there are 24 kinds of tin, 22 of them show a variation in purity of less than one-half of one per cent. Tin, therefore, that is used in collapsible tubes can be understood to mean Straits tin of a purity of more than ninety-nine per cent. While there are other tins used of practically the same purity, there is no economy, as the best production obtainable comes from Straits tin and it is not adulterated.

THE bright metallic surface of polished aluminum offers a pleasing and forceful background upon which the manufacturer's trade mark or design may be printed in a way that will bring out every bit of the richness and coloring originally planned in the artist's design.

The ease with which aluminum may be worked and handled makes it particularly adaptable for fabrication into collapsible tubes, and insures satisfaction to the consumer. There is no danger of breakage because of insufficient strength, and the ductility of aluminum is such that the bottom of the tube may be easily rolled up as the contents are used. Aluminum is the lightest of all the metals used in the manufacture of collapsible tubes. This means that the handling and shipping costs of any manufacturer using collapsible tubes made from this light metal will be lower than those of the manufacturer using collapsible tubes fabricated from heavier metals.

The non-toxic qualities of aluminum strongly recommend its use in collapsible tubes which are to be packed with medicinal and food products.

Aluminum collapsible tubes are used for packing not only balms, ointments, salves, toilet creams, shampoos and food products but many other commodities as well. Adhesives and cements are often marketed in aluminum tubes, while possibly the most familiar use of collapsible tubes is in connection with toothpastes and shaving creams.

When aluminum tubes were first used for shaving creams, the tubes were attacked by the alkali in the soap. First, the tubes swelled from the hydrogen evolved by the chemical reaction. Then, as the corrosion continued, tiny holes developed through the aluminum and the cream oozed out. Today aluminum collapsible tubes are extensively used for shaving creams because chemists have found that a small fraction of one per cent of sodium silicate mixed with soap does not change its quality but does keep the soap alkalies from corroding the aluminum.

A collapsible tube has only one secret, and if you will determine this, you have got it all. The wall thickness of a collapsible tube, at the shoulder, is the backbone of the article. If this is set, and you designate the opening required, the outside diameter of the cap, the minimum diameter of the tube and the length of the tube, the "Thief of Badgad" himself would have to give you a good article.

In merchandising with collapsible tubes, the requirements have been that a customer having a trade mark, or certain style of package developed for other lines, requires the same treatment on his tubes. Tubes can be printed in four colors, and, in using screen work, creditable results have been obtained with as many as eleven shades. The tubes can be protected to make them resistant to alkali and alcohol, and any printing that can be done on paper can be reproduced on tin in a surprisingly accurate manner. For large runs, a steel plate is used in which the design is hand engraved from solid steel, with a minimum of wear; the impression is very accurate and with little gradation.

In merchandising materials that go into tubes, we have the following advantages: the average public is familiar with them and knows how to handle them; they can be packed for traveling; they are sanitary, as you cannot get your finger into the material; more than one person can use a tube, whereas with other packages it is more limited. The package is eliminated and the unit cost is less with filling and handling expenses much under other containers.

Phenolic Compounds in Packaging

By H. S. SPENCER

PHENOLIC resinoid compounds or phenolic condensation products, as they are more technically known, are of chemical foundation and remolded or formed under heat and pressure, the manufacturers supplying material in a powdered form to those equipped to make it into the finished closure by what is known as the hot press molding system. This work is done by organizations specializing in molding and known to the trade as custom molders. Up to the present time, no manufacturer using phenolic closures has attempted to do his own molding which is a specialized undertaking requiring rather expensive and special equipment and experience.

Molded closures of durez, bakelite and the like, have been developed to exclude cork inserts for use in connection with collapsible containers, although the majority of manufacturers have continued the use of the cork insert and find that, in the use of bottle closures, the cork insert together with the phenolic molded part make an especially tight closure.

One of the outstanding advantages in connection with collapsible tubes and molded closures is that the closure does not leak nor do the contents cake or discolor in the mouth of the tube, thus throwing the often fatal strain on the tube's weak spot, the wall at the shoulder.

WHILE manufacturers are alive to the appeal of color and the vogue for colors now reaching into every phase of merchandising, it is not color alone that prompts the use of the phenol resinoid cap. While this plays its part as does the modernistic trend, these caps have many other advantages in their favor. They are not affected by acids, alkalies and similar reactives, They do not rust or corrode in contact with certain pharmaceutical products and they do not discolor the contents of the container; they are easily gripped and on bottles and jars screw down unusually tight and yet are always readily released. Their threading is stronger than the alloy metals and does not strip. They are light in weight, and have an advantage in carriage convenience and cost over metal.

Phenolic materials lend themselves to display cases, cold cream jars, vanity cases, powder boxes and in fact practically all types of set-up boxes. The acceptance of the material, because of its fine lustrous appearance, color and design possibilities, resistance to atmospheric conditions and in securing a tight closure, is already finding its presence evidenced in many of the market places for the high grade cosmetic.

Phenolic compounds permit manufacturers to have their own individual closure, bottle cap or container made for the material lends itself to all types of designs, imprinting and similar treatments as any design engraved in hardened steel molds from which the finished piece is to be made will carry an exact reproduction of what is desired.

Glass Containers

By JOHN T. OGDEN

THE number of styles, types and varieties of glass containers is so extensive that merely to classify them would be a big undertaking. And when completed, the work would be of little assistance to any one needing help in selecting the best type of container for his product.

This is because glass containers are constructed to meet the requirements of the service for which they are intended, and that being the case, the manufacturer seeking all that is best in glass packaging has only one sure rule to follow: Stop seeking! Don't try to select your own container. Instead, devote your energy to picking out a really reliable container manufacturer and let him do the selecting for you. Or take your problem to the Glass Container Association, located in New York City. Knowing the nature of your product, the kind of treatment it receives in the manufacturing process, its transportation hazards, and its sales values, the association will advise in your selection and direct you to sources from among which you may make your choice.

It is estimated that there are some 300 glass container manufacturers in this country. A few of them make almost every type of jar or bottle conceivable. Others are more specialized in their lines, confining their output to definite products such as preserve ware, perfume, narrow neck bottles, etc.

One commonly used but arbitrary classification of containers is as follows:

Milk	Preserve Ware
Narrow Neck	Non-Pressure Ware
Wide Mouth	Medicinal
Pressed Ware	General Purpose

It is easy to see that these divisions are according to the purpose for which the container is to be used. And it is true that through years of research, a glass package has been worked out that will handle almost any product one can conceive.

Take milk as an example. It is a perfect illustration of how the modern glass container is "tailored" to fit the conditions of service. First there is the production department to consider. The standard milk bottle is made to a definite height for a definite reason; namely, to accommodate itself to any filling, washing or other machinery in the bottling plant. This means that any machinery manufacturer catering to this trade can build his equipment in the assurance that all the bottles passing through his device will be of one, and only one height. Similarly, the bottler can purchase equipment knowing that whatever selection he makes, his bottles will fit. Then there is the cap (paper or metal)—the diameter of the opening has been standardized with the size of the cap.

In practical usage, milk bottles are handled none to gently. Consequently, the lip of the milk bottle has been given the most careful study and is now strong enough for every condition of service. The delivery system, too, presents its peculiar problem. The milkman makes his rounds in the "wee small hours," too dark to distinguish objects. In order to help him single out his own company's empty bottles for collection, distinctive ridges, designs and patterns have been worked into the sides of the bottle so that he can single out his own bottles by a mere touch.

No matter what the conditions of service, a glass container has been developed for it. Glass can be handled in processing or sterilization as easily and as safely as metal containers, to resist a heat far in excess of that which the contents will endure. Or, if it's a perfume, whose delicacy would be impaired by the slightest evaporation, ground glass stoppers and, if necessary, suitable sealing media, have been worked out to provide the right kind of package.

Colored glass is frequently used for some products such as chemicals, drugs, etc., which are thought to be supersensitive to light. Amber is the color frequently selected for this purpose. Sometimes color can be employed effectively for its effect on the appearance of the contents. Or again, color may be valuable for its sheer beauty, and many strikingly handsome effects may be produced by coloring the container. The most commonly used colors are blue, shades of amber, green and opal, although this merely suggests and by no means exhausts the range available.

Another section of the PACKAGING CATALOG contains a detailed discussion of closures. The closure of a container is inextricably wedded to the package itself. One will always be safe, however, if he selects his container first and his seal afterward; for practically every container can be made to accommodate every suitable style of closure on the market. To do this the container manufacturer selects the proper "neck molds" which will give the necessary finish to the top of the jar so as to fit the cap selected. There are very definite standards of measurement for these glass finishes and these are strictly adhered to.

Of shapes, there are many, of course. In addition to the more familiar rounds, squares, oblongs, and oval shapes, plain, pebbled or paneled, which are more or less standards of the trade, there are such exotic creations as the perfume bottle, designed by the most skillful craftsmen in the trade and the bottles themselves frequently made by hand.

When price is no object, there can be no objection to indulging one's imagination in the direction of design to whatever lengths desired. For ordinary commercial purposes, however, one is well advised who sticks to a standard article, which is cheap because it is made in huge quantities. The trend in industry is in the direction of simplification and standardization, and the several movements already under way undoubtedly will result in comparatively few sizes being used for each product in the course of the next few years.

Liners for Caps

By H. J. HIGDON

THE liner of a metal cap which is used to seal foods, pharmaceuticals, toilet preparations and chemicals usually consists of two materials—a resilient material and an impervious material. Both have an important work to perform in effecting the seal of a jar or bottle. One, to absorb minor imperfections of glass finish. The other, to resist action of product.

Two types of resilient material are commonly used—compo cork and pulp board. *Compo cork* consists of small grains of cork which are held together with a binder. A cork composition is superior to the natural product for liner purposes because the method of manufacture eliminates air holes which are found even in the finest grades of cork. In addition to this, it is more resilient because the grain of the cork is turned at all angles. *Pulp board* is made of wood pulp. There are several grades, some are made from virgin spruce wood, others from reclaimed paper of the streets or old newsprint. A superior pulp board is easily recognized by its clean, white appearance, freedom from blemishes and pliability. Only this class of material will give an effective and sanitary seal. Compo cork, because of its greater resilience, is used in screw caps, 33 mm. or less in diameter. Pulp board is used in the larger sizes.

Compo cork and pulp board are sometimes used alone to seal the simpler forms of products. But when this is done their surface is usually treated with paraffine or some other impervious material.

Five types of impervious materials are commonly used: wax paper, oil paper, black paper (gilsonite), tinfoil and rubber. In addition, there are several special liners for such products as oils, peroxide, etc. These materials have been found satisfactory for practically every chemical product sealed in bottles and jars. The proper impervious material to use may be determined by a series of simple tests. These tests may be conducted by the manufacturing chemist in his own office or laboratory. Thirty days is usually considered sufficient time to determine the proper liner, although longer tests are sometimes recommended. Usually, time may be saved by consultation with a reliable manufacturer of metal caps. Records of tests on basic products are kept on file for reference.

During the last few years there has been some experiment and considerable talk about a *universal liner;* that is, a liner which could be used to seal all types of products, acid or alkaline, liquid or paste. Such a liner would be welcomed by every progressive cap manufacturer and quickly adopted. It would simplify a now more or less complicated problem. But no one material has been discovered which will effectively serve the purpose of both resilient and impervious material. And no one impervious material has been discovered which will effectively seal every product under every packaging condition. Even though such a material, or combination of materials, were discovered, it would most likely be too expensive for universal use—many products now being sealed with the simplest and least expensive forms of liners.

The resilient and impervious materials are seldom adhered in the smaller sizes of caps as there is sufficient spring in the impervious materials, when of small diameter, to keep them in place. But in sizes 35 mm. and larger in diameter, it is advisable to make them as nearly one piece as possible. The adhesive which is used to do this is of more than casual importance. It should not be odorous or have the tendency to penetrate the fibres of the impervious material. If odorous, it may contaminate the product. If it penetrates the fibres of the impervious material it may make the liner susceptible to the action of the product.

The safe delivery of a food or chemical product to the consumer, and the good name of the packer or manufacturing chemist, frequently rests upon this thin disc of cork or board and paper. Therefore, it cannot be selected too carefully. Not only should it be capable of resisting the chemical action of the product it seals, but because it comes in actual contact with the product for long months at a time, it should be made of the cleanest raw materials and combined under the most hygienic manufacturing conditions.

Closures

By A. J. STERLING

FROM the earliest days of mankind the problem of sealing all classes of containers has been a vexatious question. The primitive urns, crocks and other vessels were sealed with covers of pottery, wood, skin and other crude methods, often topped with waxes of various kinds.

The first great advancement came with the discovery of cork, and this rapidly became universal in use. It served its prime purpose well and kept the contents of the container from leaking. Of course, glass became the first container with which the manufacturer had to contend and later on tin cans brought him further problems.

Glass, with its sanitary qualities, transparency and pleasing effects, took its natural leadership in a great many lines, but probably even today only about 30 per cent of those products which could be glass-packed are shipped in glass. This is due to the fact that up to the

present time the glass container, plus the seal, plus the label, has not been considered as integral a whole as the tin can.

An ordinary cork, when pushed all the way into the neck of a glass container, needs a corkscrew to get it out, and this often destroys its effectiveness as a reseal. Although corks form a very tight seal, they are hardly ever absolutely airtight. Space forbids going into details about corks or all the other seals that have since been discovered, most of which are now in use. Suffice it to say that it behooves us all to carefully study, test and compare the seals and methods before adopting any, remembering that cork, metal, lacquer, liners, glassware and material to be sealed must all be taken into consideration.

How few users know that a screw cap may be applied with a downward pressure like a crown cap? How many manufacturers know that even screw caps vary as to pitch and application? Hence, we present the following list of closures, which probably are the most prominent:

Single Seal Closures

Crown.....Various types. Used in the soda water, food products and brewing industries

American Can and Hazel-Atlas.....An aluminum cap with two ears for tear-off purposes.

Hazel-Atlas.....Aluminum and tin. A vacuum cap.

Goldy.....Generally used in the catsup industry and has tear-off feature. Aluminum.

Anchor.....A vacuum cap used in food industry for wide-mouth ware.

Band cap.....A cap used in the food industry and applied by crimping.

White.....A vacuum cap.

Re-Seal Closures

(Closures that can prevent contents from spilling when held in any position)

Roll On.....An aluminum screw cap, whose threads are formed on the container.

Williams.....A cap sealed under downward pressure.

C. T. .....Aluminum, bakelite, tin, glass, brass or zinc. This is the regular screw cap.

Duplex.....A quarter-turn cap, sealed under downward pressure.

Amerseal.....One- and two-piece. A quarter-turn cap sealed by means of interrupted thread.

Upress-it.....Sealed by means of side pressure and opened by means of downward pressure.

Sterling.....A cap for narrow- or wide-mouth ware, sealed under pressure or vacuum.

Owens.....Snap on. A friction cap.

Closure service.....A band cap.

Corks.....Rubber, natural, glass and cork, round glass stopper, paper discs.

Brass cap with lugs.....These are either friction or quarter-turned caps.

American Can and similar types using interrupted threads.

Spring stopper.....Made of glass, bakelite, etc., with internal C. T. features.

Miscellaneous

Viscose.....These are cellulose or gelatine caps, usually put over another closure to insure no tampering and give extra airtight property.

Gel cap.....Same idea as Viscose.

Tin foil hoods.....These are commonly used on alcoholic products and put over corks.

Sprinkler tops.....With or without spun-on features and allowing use by means of shaking.

Single and Re-Seal Closures

(Used on tin containers only)

One-draw slip cover.....Various types such as coffee cans, etc.

Barroll spout and cap....These are interior screw closures with non-drip spout effect.

Lock-Tite slip cover.....These are a particular type, insuring absolutely tight seal.

Friction top.....With or without inner seal. These are the ordinary pushed-in friction cover.

Newman.....With or without inner seal. These are generally used on varnishes, olive oil, etc., and are spun on.

Tite-N-Rite.....With or without inner seal. These have a hinged cover which can be used after opening as a reseal.

One-piece single seal.....Reamed-on or clamped-on seal.

Various adaptations of the C. T. cap with anti-refill or theft features.

These classifications are of necessity brief—nor do we wish to do more than to impart the information that manufacturers of products are more and more becoming convinced that a container is not merely the glass bottle or the tin can or the shape or design of either. It is now generally understood that a container means the vessel, plus the closure.

These two elements, properly selected, form the container, and together they enter into the successful sale and marketing of the product.

Labels for Round Cans

MOST of the trouble which is met in labeling can be attributed to the use of labels which are off size, improperly trimmed or printed, crossgrain or incompletely dried. The following suggestions will be found helpful and will save time in the mechanical application of the labels, making frequent readjustment of labeling machines unnecessary.

To determine the correct length of a label, add $^3/_4$ in. to the distance around the body of the can. It is generally known that wet paste on tin is likely to cause rust so that it is desirable to keep all paste between the two thicknesses of paper. For this and other reasons, experience has shown the inadvisability of using short labels, and in the interest of standardization the general adoption of the above rule is highly desirable for any size round, hermetically sealed, friction lid, screw top or slip cover cans.

To determine the proper width deduct $^1/_{16}$ in. from the distance between the can flanges. It is impracticable to calculate on labels fitting snug between the flanges, particularly on double seamed cans, because the distance between the flanges varies according to the adjustment of the individual closing machines. A full width label on a slightly narrow body will run up on the flange and fail to make a neat appearance. The slight clearance provided by adopting the above rule assures

more uniformity in matching the laps of labels under varying conditions. On slip cover cans, the correct width is determined by deducting $^{7}/_{32}$ in. from the distance between the inside of bottom flange and the top edge of the lid.

The following are dimensions for standard size labels for double seamed cans of the sizes shown:

Can Size	Type	Size of Label
$2^{11}/_{16}$ in. x 4 in.	No. 1	$3^{11}/_{16}$ in. x $8^{15}/_{16}$ in.
3 in. x $4^{11}/_{16}$ in.	No. 1 tall	$4\ ^{3}/_{8}$ in. x $10\ ^{1}/_{16}$ in.
$3\ ^{3}/_{8}$ in. x $4\ ^{9}/_{16}$ in.	No. 2	$4\ ^{1}/_{4}$ in. x $11\ ^{1}/_{8}$ in.
4 in. x $4^{11}/_{16}$ in.	No. $2^{1}/_{2}$	$4\ ^{3}/_{8}$ in. x $13\ ^{1}/_{8}$ in.
$4\ ^{1}/_{4}$ in. x $4\ ^{7}/_{8}$ in.	No. 3	$4\ ^{9}/_{16}$ in. x $13^{13}/_{16}$ in.

PARTICULAR care should be used in trimming labels to avoid tapering, i. e., the packs being wider at the bottom than at the top. Each pack should also be trimmed uniform in width; i. e., not wider at one end than at the other as it is impossible under such conditions to match the laps at both top and bottom.

It is well to have the laps meet in some sort of a circle style effect rather than in a straight line because of the difficulty of trimming absolutely parallel to the border. A slight irregularity of matching at the border is not recognized with a circle effect design.

On embossed labels, arrange the design so that the embossing is distributed somewhat uniformly over the label instead of being concentrated in one spot. Don't run it closer than one inch to the plain or lap end, although it may extend to the other end if on both top and bottom border as well as in the center. When embossing is placed in the center only, the thickness of the pack is increased at that point, thus giving the pack an unevenness which renders efficient control impossible without frequent adjustments. The embossing should not be "overdone" as this causes the labels to cling together, making it difficult to separate them. If embossing dies are cut with round corners rather than square labels, will separate more readily.

White laps are more effectively sealed than either inked or varnished ones because any paste adheres less thoroughly to the latter. For this reason, label designs should only extend about $^{1}/_{16}$ in. longer than the distance around the can body. The length of the varnished surface should also be determined in the same way. It is especially desirable on friction lid and slip-cover cans to put the lap on the left end.

For high class or embossed work, a coated litho 25 x 38, 60 lb. to 500 sheets, makes the best label. A satisfactory label is also made from super-calendar 25 x 38, 55 lb. to 500 sheets. Where a heavy varnished label is required, the stock must necessarily be lighter and a super-calendar of the same dimensions weighing 52 lb. to 500 sheets is generally used.

THE grain of the paper should run lengthwise on all labels excepting on those to be pasted all over and shrunk on containers of baking powders, cereals, etc.

If the grain runs crosswise or with the width of the label it becomes tender after the lap is moistened and is more likely to tear while being stretched. Furthermore, the lap tends to curl back before the paste dries.

Too deep a register causes the labels to pucker up in the center, thus preventing the cans from getting a uniform contact at each side as well as in the center.—*Courtesy Burt Machine Co.*

Glass Package Labels

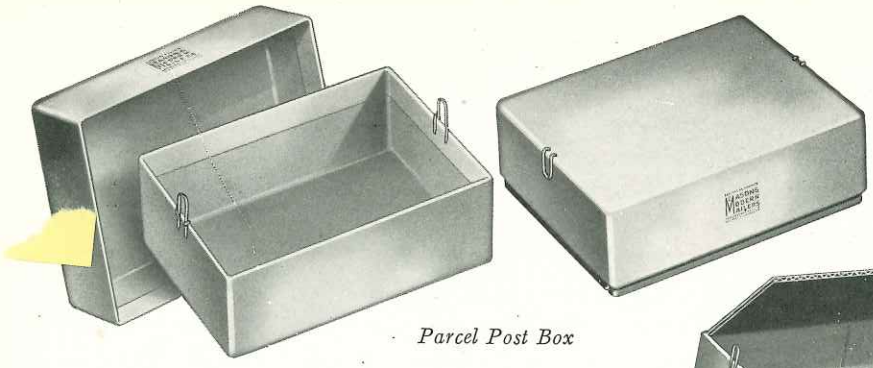
THE use of glass containers in the packaging of food products in many ways simplifies the problem of label design. At the same time, if glass package labels are to be most effective, it is necessary that a consideration be given to a number of factors which are encountered with glass but not with other types of containers.

Usually one of the functions of the label is to make the container seem well suited to the product, though in fact the container itself may be one which is used for products of widely varied natures. Since glass can be moulded or blown into many shapes and sizes, it is possible to design and produce a container especially suited to a product that will in time identify the contents. Some of the containers which are firmly established in the public mind as suitable and convenient for the products with which they are used are catsup and chili sauce bottles, preserve, pickle and mayonnaise jars and jelly and peanut butter tumblers. Other examples could be mentioned and it is true that as time goes on more and more glass containers will become associated with the products with which they are used because of their evident appropriateness of design.

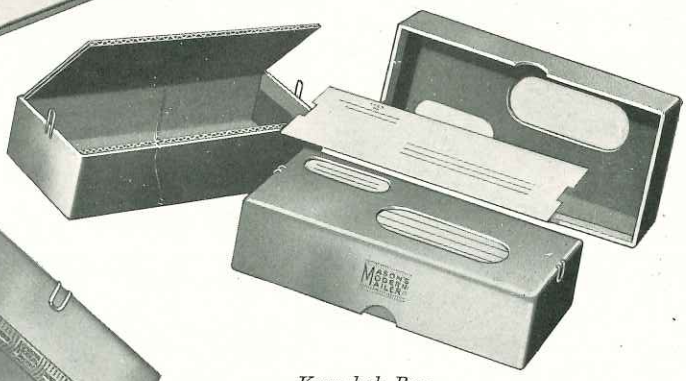
In the design of labels used for glass food containers, the first question to be considered is that of size. With most opaque containers a label as large as the package itself must be used. Obviously so large a label would not be required with a glass container nor would it be desirable, since in choosing glass as a container for food products one of the main objectives is to make it possible for the consumer to see what she is buying. Relatively speaking, therefore, the glass food container label should be of a small size and it should be so designed that the consumer can see the product when looking directly at the front of the package with the label in place.

Thus the question arises as to how a small label can be used to best advantage. There are a number of possibilities along this line which as yet have only been partly realized by packers in glass and which for emphasis can be listed and discussed. They are:

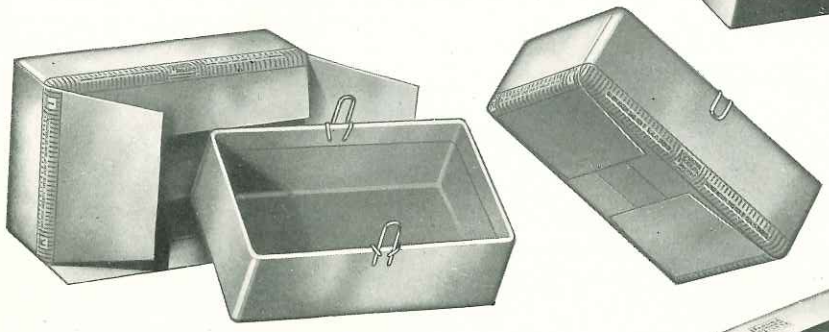
(*Continued on page 46*)



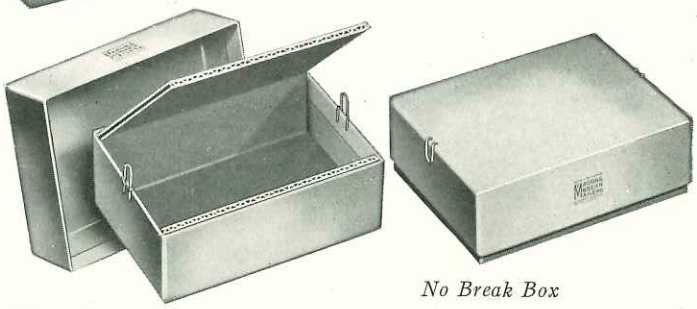
Parcel Post Box



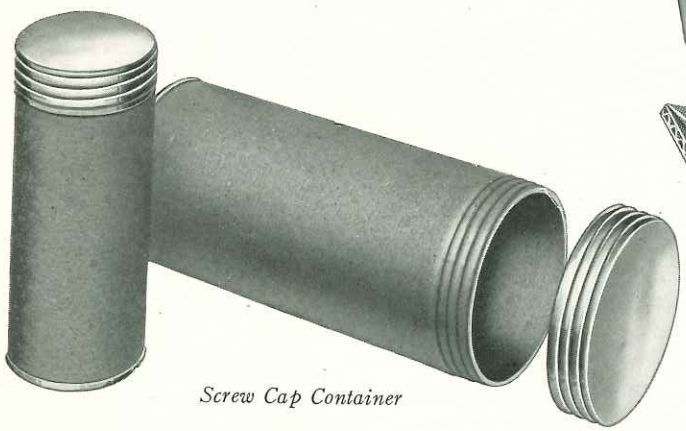
Kum-bak Box



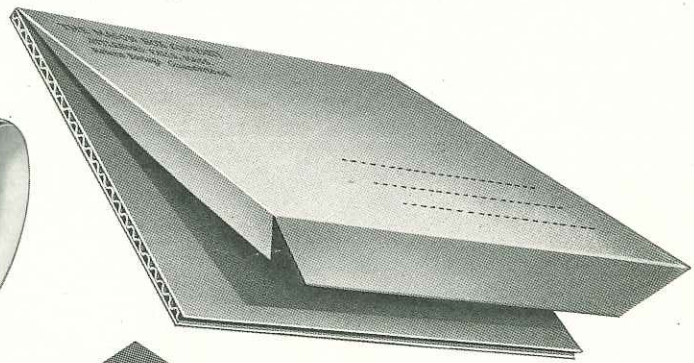
Registered Mail Box



No Break Box

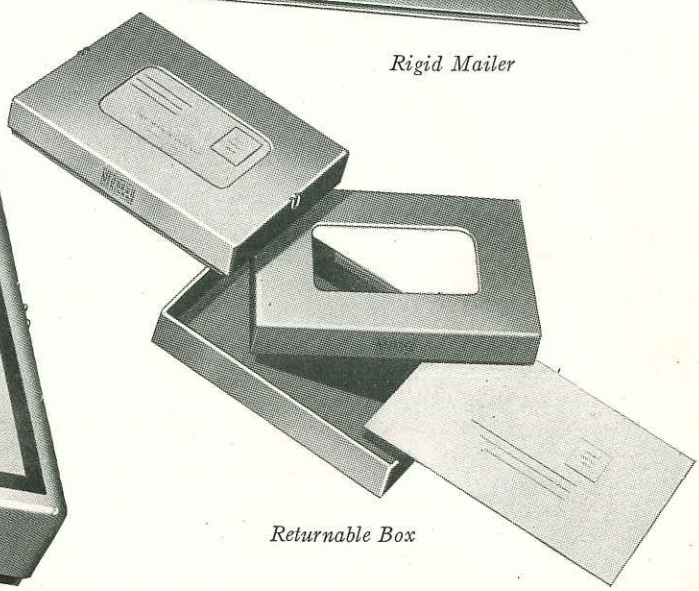


Screw Cap Container



Rigid Mailer

Letter Box



Returnable Box

Mailing Containers

By RALPH L. HARDEN

WHEN over 500 pages of the Official Postal Guide, published by the Post Office Department, is devoted to rules and regulations, it may be readily seen that there are many restrictions placed upon the postal shipper. This means that your postal shipping problem cannot be thought of in terms of "just a box" but rather as the right type of box for the particular class of mail used or product shipped.

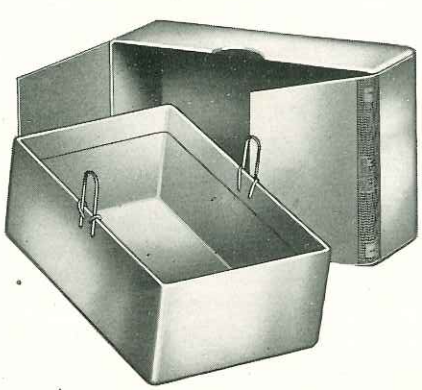
The time is past when a litter of old "empties" on the shelf will answer all the demands of the shipper. Today, with all the complexities of transportation, your package takes no pleasure jaunt or tour de luxe in its travels to your customers. In the sorting room, on the mail trucks or in the mail car of the limited, it is rammed, crammed and slammed. The mail clerks play no favorites—big ones, fat ones and skinny ones crowd, punch and squeeze each other. Yours is among them—the survival of the fittest. Time is the important factor in the postal service; schedules must be maintained at all costs. Hence, no kid gloves are used. You, therefore, must use a container that is strong enough to stand the strain, yet light enough not to cost excess postage. It must comply with all regulations regarding the class of mail by which it is sent and have the approval of the Post Office Department.

The following are descriptions and illustrations of the more common types of mailing containers:

The Parcel Post Box.—This box is used for all unsealed mail and because of the metal fasteners that securely close the box requires neither wrapping nor tying. The most widely used type of mailing container because of its simplicity, exceptional lightness and great strength.

The Fourth Class Box.—This box is made to meet the demands of shippers using sealed Third and Fourth Class mail. An exceptionally strong box which, in addition to the metal fasteners on the sides of the box, has gummed flaps at each end which allow it to be sealed. The gummed flaps are an integral part of the box itself and are usually imprinted with a safety tint which prevents tampering without detection.

The Registered Mail Box.—This box is made in a style and weight to meet the exacting demands of the Post Office Department for registered mail and requires no wrapping or tying. Usually made from extra heavy stock to give added protection; it is sealed by means of gummed flaps on the sides and ends. These flaps are printed with a safety tint which prevents tampering without detection.



Fourth Class Box

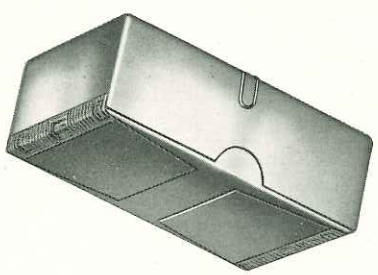
The No-Break Box.—This box is usually made in two styles; one with metal fasteners for unsealed mail and one with the sealing flaps for sealed mail, the basic construction, however, being the same. To the regular mailing box is added an inner lining of double faced corrugated board making absolutely the strongest mailing box obtainable. This type of box is extensively used for fragile goods, diamonds and jewelry, glassware, electrotypes and all products that need maximum protection.

The Letter Box.—This is a two-compartment container that allows the first class letter or bill to be mailed together with second, third or fourth class matter and reach the addressee at the same time. The envelope compartment on the top of the box is an integral part of the box wrap. The window in the envelope compartment allows the address of the letter to serve also as the address on the envelope and box. The box is closed by means of metal fasteners. Extensively used for catalogs.

The Returnable Box.—This box is made in two styles, both having the same general purpose of allowing the recipient to make convenient return to the sender. There is a cut-out in the cover through which a reversible address card shows. For memorandum or returnable shipments it is only necessary to reverse the printed address card and the box is ready for the return trip. Addressing and stamping for both forwarding and return can be done before the box is shipped on its original journey, if so desired.

Screw Cap Containers.—For shipments of liquids over four ounces, the Post Office Department requires that they be mailed in a water-tight tube closed by means of a screw-top cover with sufficient screw threads to require at least one and one-half complete turns before it will come off. Bottles must be surrounded with bran, wadding or other absorbent material in sufficient quantity to absorb all the liquid in case of breakage.

The Rigid Mailer.—For photographs, sketches, proofs or any matter that must be shipped flat, this type of mailer should be used. A single piece of double-faced corrugated board incorporated with a wrap of heavy kraft paper allows the package to be shipped either sealed or unsealed.



Generally speaking all mailing containers fall into the above classes. Unusual products sometimes call for

special treatment but their design incorporates one or more features of the above styles.

In order to meet the varying needs of numerous industries, one well-known manufacturer of mailing containers carries over one hundred stock sizes. Where the quantity warrants it, however, it is good practice to have a mailing container made in the correct size to accommodate the merchandise it carries. The secret of successful mailing, after the selection of the proper container, is to pack tight. Therefore, the container should be an exact fit.

Manufacturers normally figure shipping expense at about 4% of the total cost of doing business. How to keep shipping costs down has always been an important problem for manufacturers and merchants. Expensive as shipping may be, still more expensive is the replacement of goods injured or destroyed in transit. Protection is all important. See that your mailing containers have this prime requisite.

Glass Package Labels

(*Continued from page 43*)

1. Legibility
2. Shape
3. Background
4. Color Combinations
5. Packer's or Brand Name
6. Name of Product
7. Trade Mark
8. Poster Treatment
9. Artistic Design
10. Standardization

THE second problem presented by glass package labels is that covering instructions as to how the product should be used or suggestions as to the variety of ways in which the product may be used. Obviously, instructions or suggestions of this nature cannot be carried by the package label itself, for that must be kept simple in every respect and used almost exclusively as a mark of identification to aid the consumer in selecting the packer's product. There are two methods, however, which may be used to overcome the limitation of the package label proper in this respect. The first is the use of a second label and the second the use of lithographed caps or closures.

If the second label is used it should conform to the package label insofar as the color combination used is concerned. Otherwise it should be as plain and practical as possible. In most cases an upright oblong label placed on the back of the container will best serve the purpose. The instructions for use should be made as simple and clear as possible, for it must be remembered that the consumer in buying package merchandise is buying for immediate use and trying to avoid as much as she can the work involved in the home preparation of food.

Likewise, if the second label is used to suggest new ways in which the product may be used, it is desirable to hold to those uses which are quick and convenient rather than to list others which, while good, are complicated.

LITHOGRAPHED caps or closures can be used for the same purposes as the second label and packers are beginning to see the desirability of this practice. In the first place, the lithographed cap lends distinction to his package and at the same time eliminates the cost of extra labels and likewise the cost of applying them. However, regardless of whether use instructions or suggestions are considered necessary and desirable, the lithographed cap or closure is coming more and more to represent the highest development of the glass packing art.

In the case of lithographed caps, it is possible to carry standardization even further than in the case of labels. It is generally found desirable to adopt a uniform design and color combination for all caps, for when this is done the cap can be used with any product and thus it is unnecessary to stock a large number of caps with a variety of lithographed designs to match each product packed. The same predominant color should be used on the caps as is used on the labels. However, it is frequently possible to produce lithographed caps which will harmonize perfectly with labels without using as many colors as are found on the labels.

Cartoning Machinery

By CHARLES L. BARR

CARTONING machines, that is, machines automatic to a greater or less degree, that form up paper cartons, insert the contents and close the cartons, divide themselves naturally into two main groups.

In one group are the machines that package bulk materials, such as grains, cereals, tea, coffee, spices and products of a similar nature. Strictly speaking, the equipment available in this group are systems rather than machines inasmuch as the carton-handling mechanisms—top and bottom sealers they are usually called—are combined with weighing machines or volume-measuring mechanisms, devices for lining the carton with various types of paper and such other equipment as is indicated by the needs of the particular packaging problem being considered. The high state of perfection that has been reached in the development of these packaging systems is well known and no attempt will be made to cover this broad and interesting subject in this article.

Comprising the second group is the considerable variety of automatic machines commonly called cartoning machines. This country's, and to a rapidly increasing extent, the world's supply of the seemingly endless variety of cartoned products, except as noted previously, are packaged on these machines.

It was some sixteen or seventeen years ago that the first really successful cartoning machines were built. As is usual, the early ones were crude and slow. In fact, up until four years ago speeds of 25 to 45 packages per

minute were the rule, although some producers of large volumes of cartoned products were provided with machines that produced consistently at speeds of slightly upward of 70 per minute. In a few cases where the simplest cartoning operation was involved successful results at slightly better than 80 per minute were achieved.

About four years ago began an intensive development of cartoning machines, the results of which have been quite amazing. As an example of what has been accomplished the most efficient producers of tooth paste were running their cartoning machines usually about 60 to 70 per minute. Now any large producer of tooth paste whose cartoning machines are not operating at speeds of 100 to 120 or more per minute is, or should be, seriously concerned about it, and the concerns previously referred to who operated their old machines at 80 per minute are now operating recently developed machines at 150 per minute.

Not only has enormous improvement been made in general design and speed but manufacturers of cartoning machines have exercised great ingenuity in adapting their equipment to meet an ever-increasing variety of packaging conditions and needs. The list that follows has been chosen to illustrate the variety of products that are now being cartoned by machine. It is by no means a list of all products so cartoned.

Collapsible tubes
Bottles of all sizes and shapes
Bars of soap
Cakes of chocolate
Compressed bricks of codfish
Ice cream cones
Certain varieties of paper products
Safety razor blades
Tooth brushes
Dry cells
Mince meat
Jars
Radio tubes
Compressed bricks of hops
Candy coated gum
Licorice cigarettes
Macaroni and spaghetti
Cakes, cookies and biscuits
Artists' crayons
Ampules
Tins (tooth powder, ether, foods)
Sliced bacon
Butter and oleomargarine

All of these machines feed cartons from a stack, form them, insert the contents and close the cartons either by gluing the ends or tucking them in. Most cartoning machines are also required to feed inserts or circulars from a stack, fold them to a proper size and place them with the product in the carton. Other varieties, such as those used for cartoning cakes of chocolate, bars of soap, codfish, etc., are required to wrap the product in wax or other protective paper and then carton it, thus combining the wrapping machine and the cartoning machine. A large number of successful cartoning machines are provided with attachments that wrap the filled cartons in wax paper and heat-seal the wrapper. Any of these machines can be provided with mechanism for automatically dating each package. Many machines used for cartoning bottles are provided with a mechanism that automatically places a corrugated protector around the bottle.

Probably the first consideration that will occur to any producer of a cartoned product who contemplates taking advantage of the economies of a cartoning machine is the difficulty of obtaining cartons acceptable for machine use. If the following few suggestions are observed there will be no difficulties.

1. Go to a reputable carton manufacturer.
2. Tell him the cartons you are ordering are for machine use and tell him what machine they are to be used on.
3. Give him a blueprint of the carton. At least some manufacturers of cartoning machines will provide these.
4. All edges of cartons should be clean cut and scoring sufficiently deep to break easily on the score line.
5. Cartons should be packed in shipping containers on edge with cardboard dividers between layers and rows.
6. Cartons should not be tied together in bundle with string.
7. The glued seam should be at least $^1/_{32}$ in. away from the adjacent score line and parallel to it.

The second consideration probably is the type of carton that should be used. A glued-end carton should be used when it is important that tampering with contents be prevented and when the contents are of sufficient weight to cause them to break through the carton if the ends were closed by tucking. To prevent this latter happening and still permit the economy and flexibility of tuck-end cartons a method has been developed of gluing the bottom tuck flap.

There are two types of tuck-end cartons: the straight tuck or aeroplane type and the reverse-tuck carton. In general there is no important difference between these two types of cartons. However, in a carton the design of which indicates a definite front and back and where appearance is vital—and there are few where such is not the case—there is an important difference in cost. A straight-tuck or aeroplane type carton to be made as economically as a corresponding reverse-tuck carton must have the glued seam in half the run in the diagonally opposite corner from the other half. This brings the glued seam to the front of the carton in half the run and to the back of the carton where it belongs in the other half. Certain manufacturers of quality products, whose cartons are so designed to reflect that quality, will not countenance the detraction in appearance caused by the glued seam coming to the front of the carton, hence the popularity of the reverse-tuck carton.

As far as speed and efficiency of the cartoning machine is concerned there is practically no difference between a machine of the same make that handles the glued-end carton and one that handles either type of tuck-end carton.

There is little to say about the circulars except that it seems that a smooth or fairly smooth paper stock of 40 to 50 pounds gives the best results and that large solidly inked surfaces should be avoided. Questions regarding size, number of folds and direction of grain should be taken up with the manufacturer of the cartoning machine.

If the product is a bottle of the ordinary 5-oz. size or larger, probably a corrugated protector should be placed around it inside the carton. If the bottle is round or oval usually an unscored protector will do. But if the bottle is rectangular or it is desired to convey to the purchaser

an idea of quality and care in manufacture the scored corrugated protector is recommended. Not only does the scored, corrugated protector convey the idea of quality but it also gives greater protection to the bottle and adds rigidity to the package. Larger bottles often require also a rectangular corrugated pad at the bottom of the carton to protect the bottom of the bottle. Certain cartoning machine manufacturers are prepared to supply a mechanism for automatically handling this pad.

A development of the past 15 months that will particularly interest many smaller producers of packaged products is the progress that has been made in building adjustable cartoning machines. Such machines are now obtainable with operating speeds and efficiencies that compare favorably with the best non-adjustable machines. As a guide to those who are interested in this type of equipment the following suggestions are offered.

1. Any dimension of the smallest carton should not be less than two-thirds the corresponding dimension of the largest carton.
2. Adopt a size of circular that can be used in all packages handled by one machine.
3. Changes from one size to another can usually be made in from 30 to 45 minutes after the routine has been learned.

As a final suggestion to guide prospective purchasers of cartoning machines it should be kept in mind that the carton should be a fairly snug fit for the contents, but never should the contents bulge the sides of the carton.

Automatic Wrapping Machines

AUTOMATIC wrapping machines play a vital part in the production of a wide variety of packages. Articles that we use every day would not come to us in their protective and handsome wrappings were it not for the development of high speed labor-saving machinery whose economies make it possible to sell these packages at low prices. Take, for example, a package of chewing gum. You would not for a moment consider buying it unwrapped. Think of what a machine has to do to turn out this package.

The latest type of chewing gum wrapping machines first wrap each stick in foil or paper and then put a band around it. Five sticks are then automatically assembled, wrapped in wax paper or foil, the seams being sealed by the application of hot wax, and the completed package is then wrapped in a printed band. The machine is capable of turning out a ton of gum a day with only two operators. The saving in hand wrappers and in floor space which is effected by this machine, to say nothing of the fact that the machine does the work better and more neatly, are indeed noteworthy accomplishments.

The tobacco industry has proved one of the largest users of automatic wrapping machines. Most of the well-known cigarette packages are wrapped in transparent glassine paper, which is put on by an automatic machine at the rate of 100 a minute. The same type of machine has been adapted for wrapping packages of smoking and chewing tobacco in wax paper, sealing the seams by heat. Cigarette cartons and cigarette packages are also wrapped automatically. A new humidor type of wrapping has been devised for a well-advertised brand of cigarettes. Five boxes are enclosed in a heavy, beautifully printed, foil wrapper. The folds, instead of being sealed by glue, which is sufficient to keep out dust and dirt but not moisture, are sealed by the application of hot wax.

In the soap industry such complicated types of wrapping as are seen in Cuticura soap and Woodbury's Facial soap are accomplished easily and rapidly. The soap is inclosed first in a piece of cardboard, then a folded circular and next a single sheet circular, all of which is fastened firmly around the cake with a sticker which is automatically applied by the machine. This package is then wrapped in a printed wrapper which is glued and the soap is discharged, ready to be packed. High speed machines for laundry soap are now available which turn out 200 cakes a minute, wrapping the soap in a double wrapper and gluing the ends.

Perhaps the most difficult of all articles handled by automatic wrapping machines are the products of a large bakery. Packages of crackers, both square and round, are sold in cartons. Generally speaking, the crackers are packed by hand into boxes, then wrapped by machine and finally packed by hand into bundles containing a dozen or so cartons. Recent developments, however, have greatly improved the packing methods, eliminating much of the hand labor by substituting automatic machinery to pack and wrap the crackers.

Such products as tooth paste, cracker cartons, and shaving cream, which are packed in units of six or a dozen and shipped in cardboard boxes, can now be wrapped by an automatic machine in a heavy kraft paper. In this way considerable savings are effected both in hand wrapping costs and in the cost of materials.

Bundling machines are used for cigarette boxes, match boxes, baking powder, ginger snaps, tapioca, graham crackers and a wide variety of goods which are sold in small packages.

Soft, iced cakes fresh from the icing machine must have some sort of wrapping. When the cake bakers were asked if they would be interested in a machine to do this work they said, "It can't be done." But they were wrong. Practically all the large cake bakers are now using automatic wrapping machines for their box cakes and for cup cakes, wrapping them in waxed paper and sealing by means of electric heaters. The machines handle the cake so delicately that they do not mar the frosting and they wrap evenly and securely the ordinary run of the cutting machines. Plain-wrapped slices

sell much better when the wrapper is securely sealed in place. Where the cakes are also to be cartoned by machine it is doubly important that the waxed wrapper be firmly sealed.

For packages which need protection from moisture as well as from dust and dirt, the double wrapping of waxed paper and a printed label is ideal. Tandem machines are available for applying this duplicate wrapping —the packages are fed through two machines instead of one. Waxed paper is applied first and heat sealed and then the printed wrapper bearing the maker's trade mark is put on. Tandem units such as these are electrically controlled to minimize supervision.

The industries mentioned above are only a few in which automatic wrapping machines are used. Candy, clothespins, collars and cuffs, face powder, razor blades shaving cream, toothbrushes, spark plugs, bias tape, cigars and dry ice are a few other products which have adopted automatic equipment as the only solution of their production problems. The machines for turning out the sort of work already described are constantly being improved. A recent development is a device for controlling the feeding of the paper. On many machines the paper is not fed into place unless a package comes through to be wrapped and this step eliminates unnecessary jams and in many cases means that one less operator is necessary to supervise the work of the machine. On the types used for wax wrapping and heat sealing, thermostats control the hot plates, not so much to conserve electricity as to keep the heaters at a constant temperature. Another automatic device prevents the burning of a package in case the machine stops, and still another throws out the clutch in case there is a jam. Great advances have been made in recent years in developing the kind of wrapping machines that the manufacturers want and the use of machinery of this kind is spreading rapidly throughout the world and is being extended to a greater number of products.

Wax Wrapping of Packages

By A. H. AXBERG

THE wax wrapper cannot be termed an "all purpose" wrapper any more than any other type of wrapper can lay claim to such a classification. In general, wax wrappers are applied to packages containing commodities where it is essential and imperative to maintain the article as long as possible in the same condition as when it was originally packed. Wax wrappers on the outside of packages containing corn flakes, rice flakes, bran, crackers, ice cream cones and many other items, plays an important part in keeping them fresh and crisp. Then we have the other class of merchandise where it is desired to keep the moisture in the package, such as coconut, soap powder, bread, cake, etc. There is no need of groping in the dark and wondering whether or not a product will have greater appeal if wax-wrapped. There are splendid laboratories now maintained by several companies which will make tests gratuitously and give unbiased reports indicating whether or not a wax wrapper on the outside of the packaged product would be advantageous.

There are two reasons why the tonnage of waxed papers has increased. First: the manufacturers of waxed sulphite and waxed glassine paper have made progress in making their papers more uniformly transparent and of better quality and strength. There is no longer any resistance to the adoption of the waxed paper wrapper on packages because of lack of transparency. In fact, packages now wrapped with the new types of waxed papers available are enhanced in appearance. Second: careful and definite tests have established the fact that one of the most protective of an all-paper package available is the one wrapped with waxed paper. This is attributable to the fact that the wrapper can be made hermetically tight by the easy folding of the paper and the fusion of wax at the points where the seals are to be made through the use of heat elements. The low costs of the many protective types of waxed papers with their unusual transparency has caused many firms, previously only mildly interested, to adopt the outer wax wrapper. In addition to the protective value of the wax wrapper we find some companies are recognizing the advantage of the seal it affords, eliminating, as it does, pilferage, particularly on packages that are tucked, such as cough drops, potato chips, cookies, etc.

THE consumer already knows that wax paper is a protective medium, but manufacturers have seen fit to spend millions of dollars advertising the fact that their merchandise has the advantage of waxed wrapper protection. The purchaser unconsciously reaches and selects packages carrying waxed wrapper protection, knowing that the package is sanitary and feeling that any manufacturer who takes the care to so protect his merchandise is, in all likelihood, following out the same care in the operation of his plant. The year just brought to a close found a larger variety of packages on the merchant's shelf wax wrapped than ever before, and the manufacturers of wax paper, as well as of the automatic wrapping machines, are equally responsible for this.

Any returns which a concern secures by wrapping packages with waxed paper is governed to some extent by the manner in which the wrapper is applied to the package by automatic wrapping machines. Wherever possible, it is desirable that the wrapper be so applied that the longitudinal seam will not appear on the front or back panels of the package. The wax wapping machine should aways be capable of applying the wrapper snugly to the package to accentuate the transparency of the paper. The care and precision in which the end

folds are made have a direct bearing, of course, on the protective value of the wrapper and there seems to be a noticeable difference in the various methods of wax wrapping performed by different types of wrapping machines on the market; therefore, investigation and selection of equipment for wax wrapping is essential.

At the present time the automatic wax wrapping of packages has been confined chiefly to square or rectangular packages. There has been no practical machine developed for the wax wrapping of cylindrical packages. Of course, the wrapping of products such as bread, bars of candy, chewing gum, etc., have been successfully taken care of by concerns specializing in the manufacture of this type of equipment.

THE varied requirements for automatic wax wrapping machines has been a decided factor in the development of four or five models of the same design, but each constructed to take care of a certain range of packages. The improvements on the machine itself have been so steady and rapid that each model, although described as an adjustable machine for the handling of different sizes within its range, when once adjusted to the handling of a specific size, functions as accurately and steadily as a single-purpose machine. The frequence with which the manufacturer of automatic machines is called upon to furnish parts to add additional sizes to the wrapping machine already in use by the manufacturer proves that the adjustable machine is the logical unit to install when selecting automatic wrapping machines, even though at the time of making the selection only one size package is contemplated on being handled.

The speed at which the package may be wrapped with waxed paper is dependent upon the size of the package, as well as its construction. Small cough drop packages are easily handled at a speed of 100 or more per minute; large packages like those holding 100 ice cream cones, measuring approximately $4^3/_8$ in. x $11^3/_{16}$ in. x $15^5/_8$ in. can be handled at a speed of thirty-five per minute. The floor space occupied by the four models of wax wrappers varies from 7 ft. x 7 ft. up to 13 ft. x 13 ft. and a one-horsepower self-contained motor in each model is ample for operating the machines. A waxed wrapper on the package should not be considered an additional expense, as the amount of money spent for paper, plus the carrying charges on the wax wrapping machine, is easily returned by reason of increased sales, resulting from merchandise delivered to the consumer in a better condition and a considerable reduction in the return of spoiled goods. Certain industries found their radius of distribution limited because the merchandise would not hold up well under transportation and in storage. In this connection wax wrapping machines played an important role by applying a protective wrapper on the package, and extending the time that the product would remain in a saleable condition on the merchant's shelf, increasing sales with reduction in returned goods.

Wax wrapping machines are fully automatic, in the sense that the waxed paper is purchased in rolls, the roll of paper is placed on the machine and the packages are wrapped and delivered, either as a continuing operation from previous machines or placed in the receiving belt by hand. Safety devices and controls preclude the operation of the machine excepting when there are packages to be wrapped. This reduces the spoilage and permits, when necessary, of an intermittent operation with as accurate results as if the machine was in constant operation. Modern wax wrapping machines are free from complicated mechanical actions. With the safety devices and controls featured in certain units, it becomes unnecessary for a skilled mechanic or operator to be in attendance in order to secure continuity of production. Care should be taken to determine if these features are a part of the unit as they have an important bearing on the daily production and the cost per package for wax wrapping. Certain types of wax wrapping machines apply the wax paper so that the longitudinal and end fold seals are made as tight as the wax paper itself. You wax wrap your packages to make them tight—make sure that the machine you select will accomplish this result.

The annual carrying charges on most wax wrapping machines is less than the salary per year to one girl for hand wrapping of packages. An automatic machine will in most instances do the work of twenty-five girls. The average machine operation cost for applying waxed paper to a package at a speed of sixty per minute would figure less than ten cents per thousand packages, including interest on the investment, depreciation on the equipment, power to operate the motor, as well as current for the heaters and supervision of the operation of the machine.

Scales for Check-Weighing of Packages

By H. D. GINTER

THE human element is responsible for a high percentage of problems in packaging, and any discussion of weighing appliances must take into account the obvious fact of labor—the habits of which follow paths of least resistance. If scales demand of labor the mental effort it will not give, someone gets the worst of it—either the manufacturer or his patron, and to grasp the vital significance of this proposition it is necessary to get before us the simple mathematics that fractional ounce overweights in a multitude of packages cause tremendous profit losses.

A singular condition exists in the business world today relative to scales, an outgrowth of the fact that innumerable weighing devices have been sold all over the United States and Canada by excellent and well-directed salesmanship, and a large proportion of that success has been gained on theoretical lines which seemingly had no flaw in the whole scheme of reasoning.

INDULGENCE in theory is a pleasant diversion, but practice belongs to the world of cold and relentless fact. It follows that a scale may satisfy the most ad-

vanced theory, but when it is placed in the hands of labor there is a struggle for the mastery between "theory and practice." These "theory" weighing devices would be less the objects of criticism if labor could give the things they demand—skill and concentration in fast, accurate weighing.

Consequently, there is a confessed need for a weighing appliance that will simplify the act of weighing and place precision accuracy within the grasp of any class of labor. Simplify the act of weighing and labor will perform it well; make it difficult, and labor will either give away your merchandise or put your name in bad repute for short weights.

The even balance principle, a basic law for all scale structure, is no theory—it is existent fact. To develop from this law a scale that will protect both the packer and his customer by visible indication of fractional ounces magnified, has been the success of a nationally known scale industry during ten years devoted to experimental work and to nation-wide surveys.

The scales have revolutonized methods of weighing and the industrial world has responded to this new standard of accuracy in many remarkable ways. Accuracy is found in a dial that instantly visualizes underweight or overweight by fractional ounce indication, so that the operator is constantly warned against weight errors. It means fast, accurate weighing reduced to the last degree of simplicity, and labor performs it easily.

WEIGHING appliances are the all-important fixtures in plant equipment because profits are directly controlled by them. Progressive industry is awake to the fact that merchandise passed over a scale means actually the weighing of money. Comes then inevitable loss in undetected errors which ordinary weighing appliances do not disclose.

Collapsible Tube Filling

THE constantly increasing use of collapsible tubes is due in no small way to the ease of operation and flexibility, as to changes in size, of the modern tube filling equipment. A complete outfit for filling, closing and clipping collapsible tubes may be purchased for as little as $130 and this will perform these operations at 15 to 20 tubes per minute. The small user of collapsible tubes is thus almost as efficient, right from the start, as the larger user. A complete range of equipment of various sizes is available without the necessity of building any special equipment. For less than a thousand dollars a complete outfit to turn out 35 tubes per minute can be had. As production warrants, this output can be increased to sixty or eighty tubes per minute. A new completely automatic filling, closing and clipping machine operates at speeds up to 140 tubes per minute with one operator and is designed to feed directly into automatic cartoning machines.

Considering the work they perform, modern tube filling, closing, and clipping machines are remarkably simple and can be maintained in proper operating condition by careful employees. No unusual mechanical skill is required in making the various adjustments for different sizes of tubes, and if those considering the use of this equipment for the first time will put their problem up to a reputable maker of this class of machinery, they can rest assured that the machines will perform to their satisfaction.

The selection of tube filling equipment depends on three important factors: first, the consistency of the material at the time of filling; secondly, the range of sizes of tubes; third, the daily production anticipated.

If possible, materials such as cold creams, ointments, etc., should be filled in a warm fluid condition, as much simpler filling units can be employed. At the same time, it is unwise to fill tubes with any material in a warm state, should the material shrink considerably on cooling. This shrinkage will buckle the wall of the tube, giving it a partially empty appearance, which is undesirable in the eyes of the ultimate purchaser.

It is also common for a tube user to attempt to overfill a tube in order to give a "fat" appearance and impress the purchaser with the quantity of material he is getting. This over-filling of tubes is efficiency's greatest enemy as it is necessary to stop frequently and wipe off the jaws of the closing devices. In addition to this, these tubes are most liable to leak after being on the dealers' shelves under unusual climatic conditions. A properly filled tube has sufficient flap on the closed end to allow material to expand without seepage through the closed and clipped ends. An "overfilled" tube will usually have a layer of the material inside the fold of the tube, and if the material is even mildly corrosive, such as a shaving cream, the tube decoration and the polished clip will soon be spoiled in appearance.

THE closing of tubes is usually done with two folds. The end of the tube is flattened, a portion of it turned over, and pressed flat. This operation is then repeated, all automatically, of course. For material, such as lighter fluid, rubber cement, rubber solvents, etc., containing highly volatile material, it is sometimes advisable to make the first portion turned over wider than usual, with the second fold the regular width. This gives eight thicknesses of material rather than the six thicknesses obtained with the regular fold, and in reality makes the seal fifty per cent more secure.

After the closing operation, the clipping is performed. This guards the end of the tube and prevents accidental opening of the folded end. Tube clips are cheap and are applied automatically by most users. At the time the clip is applied, a control number can be stamped on one side of the clip if desired. Ejection of the tubes from the machine after the three operations of filling, closing, and clipping are performed, can be automatic or manual as desired.

Labeling Machines

LABELING machines have been developed along with the filling, screw-capping, cartoning and wrapping machine to such an extent that they are of equal importance to the manufacturers for many reasons. Nor is their sphere limited only to the food, drug, chemical, toilet preparation and bottling industries, but they find their way into the cigarette and cigar factory, hardware, hosiery and almost every line where labels are used. Mop and broom handles are now labeled by machines, likewise insecticide sprayers and wet-stones.

Some of the advantages of the modern labeling machine are the following: It produces a large output, occupies a comparatively small floor space, labels neatly, accurately and uniformly.

Labeling machines may be classified, first, as semi-automatic and automatic and the latter as rotary, straightaway and can labelers. The semi-automatic labelers, perhaps the first machines built, were designed for the labeling of beer and similar bottles, but their use today covers almost the entire labeling field. They are in greater demand today than ever because even the small manufacturer believes in machinery for its economy and superior quality of the work performed. The semi-automatic labeler, however, requires an operator to feed each package or container to be labeled. The article is placed into the machine by hand, the label or labels are applied and then the article removed from the machine by the operator. The speed of these machines being limited to 25 to 35 articles per minute or less, depending upon the character of the article and the energy of the operator, led to the development of the fully automatic labeling machine. Nevertheless, the semi-automatic labeler will always be popular and profitable for small production and where short runs of many different sizes and shapes of packages must be labeled.

The automatic rotary labeling machine, which is an outgrowth of the semi-automatic, gums the label and applies it in a similar manner, but it has incorporated conveyors for feeding the articles through the machine without handling by the operator and therefore is much faster than the semi-automatic labeler, attaining a speed of 85 to 90 per minute. A recent important improvement in this type of labeler is the attachment for applying tinfoil around the neck of ginger ale and like bottles. They are furnished by several concerns and are particularly adapted to the labeling of round bottles and jars used in the bottling and food industries as well as some chemical and drug products. They apply on bottles, the body label only, the body and neck label or the body and neck labels and the tinfoil.

IN one large eastern food factory a battery of six automatic labelers of rotary type are being used. Each machine operates at a speed of 72 jars per minute. The average production per day of $7\frac{1}{2}$ hours is 29,160 neatly and uniformly labeled jars, thus indicating an efficiency of approximately 90 per cent. Each machine occupies a floor space of approximately 4 ft. x 4 ft. for the machine proper and 2 ft. x 10 ft. for the conveyor and is connected to the discharge conveyor from the capping machine so that a completely automatic unit is formed. Only one operator is required whose duty it is to keep the machine supplied with labels and glue, and also to inspect jars and caps before they enter the labeling machine. The goods handled are of high quality with a national reputation, and therefore none but clean labeling and uniform placement of labels is tolerated. There is no record of bottle breakage chargeable in any way against the labeling machines. The cost of labeling has been carefully figured, taking into consideration depreciation, repairs, cleaning, power and other overhead expense as well as the actual labor cost, and the resulting cost of labeling one thousand jars proved to be 34.9 cents.

THE straightaway type of automatic labeling machines, which are of more recent design than those above mentioned, go further into the general field of labeling because they can be adapted to sealing or labeling cartons, boxes, wrapped cakes of soap as well as the food, drug and bottlers' products. They have many advantages in the way of speed, accurate registration, cleanliness, adjustability and accessibility. They are built in two standard types known as single and double labelers, both of which types are also furnished in the duplex models.

The single labeler applies one label on one side of the package or container and the double labeler two labels on opposite sides simultaneously. The single duplex labeler applies one label on each of two packages or containers at the same time and the double duplex four labels on both sides of two articles simultaneously. In other words, if these machines are running sixty revolutions per minute, the single will apply 60, the double 120, the single duplex 120 and the double duplex 240 labels per minute although the machine is running comparatively slow.

The duplex labeler is a recent development born of the insatiable American demand for speed and production. In order to keep pace with the filling, capping, cartoning and wrapping machines, all of which are often hooked up with an automatic labeler in a straight-line production unit, it was necessary to get greater output from the labeler without applying the glued label in less time. It requires time to apply glue to the label and more time to make the label adhere properly to the container, therefore the slow running duplex labeler can do a better job than the single machine speeded up which seemingly throws the label at the package without sufficient time to apply it properly.

NO less important is the perfection of another automatic labeling machine for round bottles where the name of the product appears in raised lettering on the bottle. In such instances it is an absolute necessity to

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Carton and Can Filling Equipment

By WILLIAM K. EMBLETON

THE development and perfecting of automatic machinery enables the packer to obtain quantity production at lower costs, to standardize the sizes of his packages, and enable him to carry to the consumer, through the message printed on his package, a standard name or trade mark by which the consumer can again seek his particular brand of products. This insures the packer his reward for maintaining qualities.

Automatic machinery is the foundation on which the structure of many American merchandising successes have been reared. Slow and costly hand production methods have eliminated many manufacturers from competitive markets.

There is no necessity for any manufacturer to depend on hand labor in preparing his package, as American machine designers in the last decade have developed and refined automatic machinery for every packaging purpose to such an extent that today a machine is obtainable whether the packaging process follows standard practices or is of a special nature.

Inasmuch as machinery must be considered somewhere in all packaging production plans, the first consideration is the positive necessity for careful attention and preparation of the various component parts in the make-up of the package.

This thought cannot be stressed too highly. All materials entering into the make-up of the package should be purchased with a view to their efficient handling by automatic machinery.

As for instance, in considering a carton product, the size of the carton should be carefully worked out to obtain the best dimensions for easy machine handling. The construction of the carton should be carefully planned to be sure that the side gluing seams are in proper position, and the side flat cut to the proper length. Careful attention to these details in the beginning will save both the packer and the machine manufacturer a great deal of trouble and grief when the time comes for installing machinery.

This does not mean that cartons, protective papers or labels for machine handling differ importantly from the same materials that would be used for hand packing. It simply means that there are certain necessary features and specifications to be followed to make sure that all materials will follow uniform lines. All cartoning materials handled on automatic machines are manufactured on accepted commercial standards, but it must be borne in mind that a machine is made of iron and steel, along fixed lines, and if the material fed to the machine differs in size and shape, then trouble is bound to ensue.

As an illustration, if sealing and filling were the only consideration, a carton might be planned to obtain the largest possible face, perhaps because an advertising advantage might be seen. In doing so, the base of the carton would necessarily have to be narrow, so much so that when handled on a machine, this narrow base would mean a constant tipping of the carton, with its attendant troubles and delays.

Therefore, in planning a carton, care should be taken to have the various dimensions properly proportioned. The ideal specifications are to have the face of the carton approximately twice the thickness, the height one and one-half times the width. The cubic content of the carton must be carefully considered. If a pound of ground coffee is to be packed by hand, a carton containing about 66 cu. in. would be sufficiently large for the reason that there is no time limit to the tamping or settling of the coffee, whereas if the carton were handled by machine a cubic content of 72 cu. in. would be necessary for the reason that the carton passes through the machine on a certain definite time schedule and receives a definite amount of tamping. Machine experience proves that with a carton containing 72 cu. in. a pound of ground coffee would settle nicely just below the score or folding lines of the side flaps.

IN the matter of labels and wrappers care should be exercised in obtaining them with the grain of the paper running the same as specified by the machine manufacturer. Paper curls with the grain of the paper and when labels or wrappers are moistened, the paper stretches with the grain. If the labels are handled by hand, sometimes it is not important which way the labels curl or the way the paper stretches, but if handled by machine the curl and stretch must be one way, and the same with every label.

Label and wrapper manufacturers are always glad to follow definite specifications for grain of paper when so ordered. Again, it is simply a question of care in ordering and being sure that the specifications are correct.

Any manufacturer of automatic packaging machinery will be glad to furnish definite specifications covering the construction of cartons or the make-up of labels. Securing these details will save many weeks of labor later on when machine production is planned both on the part of the packer and the machine manufacturer.

Many packers hesitate in the beginning to think of using machinery, believing that automatic machinery will prove too expensive for their purpose. Investigation will prove this is not true, as machine manufacturers are able to furnish equipment that will economically fit in with the requirements, not only of the larger packer, but also with the packer whose output is small.

The market today offers everything from inexpensive semi-automatic equipment, which operates at comparatively low speeds, to the highly specialized fully automatic equipment, operating at the higher speeds, and no matter which class of machinery is used, they are all planned so that with their use, outputs can be obtained more efficiently and economically than by hand labor.

Packers just establishing a carton packaging business can install a semi-automatic carton sealing machine. This would require the services of an operator and would produce from 12 to 15 satisfactorily sealed cartons per minute. For the weighing operations, he can obtain a small semi-automatic weighing machine which will operate at the same speed as the carton sealing machine. These two machines can be hooked together by connecting conveyor belts so that, as the cartons are sealed, they are automatically passed along to the weighing machine. An operator would be necessary at the weighing machine, but even considering the investment of the two machines, the upkeep charges and the labor costs of two operators, packages can be produced at a far less cost than the same number can be produced by hand labor.

As outputs increase, speedier and more fully automatic equipment will be needed. The semi-automatic machines can then be discarded in favor of a battery of machines with which the entire operation of picking up the cartons one by one and feeding them to the sealing machine, then automatically passing them to the weighing machine and, after the material is weighed and filled into the sealed cartons, they are passed to the sealing machine for closing and sealing the tops.

Should the product be of a character to require extraordinary protection against atmospheric or other conditions an inner paper bag liner would have to be used. This lining would require an additional machine placed between the bottom sealing and weighing machine, the lining machine taking paper from a roll, cutting off the proper length, forming the bag and inserting the finished bag into the carton.

A set of machines of this character would make the entire packaging process entirely automatic, only one attendant being necessary to see that the machines are properly oiled and kept in good running order.

Equipment as above described would deliver thirty complete sealed, lined and filled packages per minute.

FOR the packer whose output exceeds 15,000 packages a day, equipment of higher speeds will be necessary and equipment at 60 packages per minute will interest him. This high speed equipment performs the same operations in the same manner as described for 30-per-minute equipment in the same general line-up, each individual machine, however, is more sturdily and elaborately constructed, and naturally, this heavier equipment is considerably more expensive than that operating at the lower speed of 30 per minute.

The equipment just described would be used by the manufacturer packing in the plain printed carton, used without any outer wrapping. Materials such as tea, coffee, spices, sugar, rice, borax, coconut, drugs, poultry and stock remedies, macaroni, starch can be packed without any further protection than the printed carton, with sometimes the inner liner.

In many instances the character of the material packed may demand a package that would offer greater strength than the printed carton, and would also embody superior protective features. The modern machine designers have met this higher requirement with a machine called the tight wrapper, which produces the highest type of package yet devised. This is made of an inexpensive chipboard shell which is formed, lined, filled and sealed in exactly the same manner as the printed carton on exactly the same machines, after which it is automatically passed along to the tight wrapping machine which applies a printed wrapper around the chipboard shell. Adhesive is applied all over the entire surfaces of this wrapper. It is then registered to each of the four panels of the shell and neatly turned in at each of the ends. This printed wrapper, as it dries, shrinks tightly to and adheres to every portion of the chipboard shell and becomes almost an integral part of the shell.

This process of laminating the shell and wrapper produces a package fully 50 per cent stronger than ordinary printed cartons, and is particularly to be recommended where the product packed is of a dusty and sifting nature, for the reason that by placing the wrapper around all of the sealed edges of the shell, it closes every crevice and corner. It is literally a "tight" wrapped package, positively sift-proof and the only package yet devised that is proof positive against the inroad of bug and weevil life. The tight wrapped package is particularly to be recommended for the packing of cereals, flour and other products which are subject to weevil and insect infestation from the outside. Cereal and flour manufacturers go to great lengths to be sure that all weevil life in their product is killed before it is placed in the packages. Until the advent of the tight wrapped package, they had no protection against the infestation from the outside through the carton being placed in close proximity to other infected materials.

The phenomenal strength of the tight wrapped package means that the manufacturer has less breakage to contend with and, therefore, can afford to ship in lighter and less expensive containers.

The above treats of rectangular packages only. Separate types of machines are necessary for producing round packages, but as in the case of the rectangular package, automatic machinery can be obtained for every process in the make-up of the round package, first weighing material and filling it into the package, then applying the cans and labeling.

AS in the case of the rectangular packaging machines, round packaging equipment is manufactured in various types, ranging from the semi-automatic at slow speeds to the high speed fully automatic equipment operating at a speed of 60 per minute.

The weighing machine units include those that will weigh gross, that is, including the weight of the container with the weight of the goods; others that weigh the material net. This is accomplished by weighing first in calibrated and balanced receivers, after which the material is poured into the waiting containers. Net weight weighers are particularly desirable where the material handled is of an expensive nature and extreme

accuracies desirable. The savings in wastage alone with this type of machine oftentimes pays the cost of the machine in a short time.

Practically every labeling need can now be met with machinery of standard construction. This includes loose labeling machines, which apply the label loosely around the can, just applying the glue at the seam of the label or a rim of glue around the top and bottom of the label. Types of loose labeling machines are manufactured for labeling either round or rectangular cans. Then, there is the shrink-tight labeler, which is necessary for use when cans with high outstanding beads are to be labeled, these similar to the standard baking powder cans, or where the covers of the cans are of larger diameter than the bodies. Loose labels cannot be used with this type of can, for the reason that the high outstanding bead or the larger covers hold the label away from the body of the can, producing unsightly wrinkling, and a label only half attached.

The shrink-tight labeler overcomes this difficulty by passing the label through a bath of tepid water. This allows the label paper to stretch, the stretch in the label paper being about $^3/_8$ in. to the foot. Adhesive is then placed over the entire unprinted surface of the label while it is wet; it is then carefully registered around the can, which is passed along to an automatic dryer. The air in this dryer is heated. A series of revolving shelves move slowly around, so that the label dries gradually, and in so doing, shrinks tightly around the high outstanding bear or the oversized covers, as the case may be, without the slightest wrinkle, and insuring the covers being held tightly to the bodies of the cans, eliminating any possibility of leakage. About one-half hour is required to make the journey around the dryer, after which the can is automatically ejected and is ready for subsequent packing operations.

Labeling machines can be obtained in various sizes to operate at various speeds. They range all the way from semi-automatic hand tools, with which one operator will label from 15 to 18 cans per minute, to the shrink-tight labeler which performs all of the operations of feeding the labels, dampening them, applying them to the cans, and then placing the cans in the automatic dryer, this without an operator of any kind being required, except the usual attendant for the general care of the machine.

Practically all types of carton packaging, filling, wrapping or labeling machines are constructed so that they can be adjusted to several different sizes of cartons within reasonable range. Different commodities can be handled on the same machine where the characters of the commodities do not change too radically. This is done by fitting the filling machines with hoppers especially designed to meet the requirements of the different products.

Care should be taken when purchasing machines to choose manufacturers who can assure a reliable service that will maintain the machines in good working condition, and so guard against any break in packaging operations which will curtail output.

Bottle Filling Equipment

LIQUID filling machines may be divided into two general groups: gravity-pressure and vacuum. The former is comparatively simple and is suitable for moderately rapid filling of medicines, tonics, toilet water, fruit juices, perfumes, extracts and other easy, light-flowing liquids. From one to eight bottles may be filled at a time at rates up to 35 bottles per minute. The action of this type of machine is, as indicated, a pressure or gravity flow of the liquid into the bottle.

Filling by vacuum is the cleanest and most economical way to fill many products. Despite the uncanny perfection of modern bottle-making machines, there is an appreciable percentage of defective bottles—bottles that have holes, are chipped or cracked. Such imperfections are not readily detected in the ordinary handling of bottles into the filling machine, thus resulting in waste of product, mess and extra labor. Vacuum filling machines, however, automatically avoid filling such bottles. Furthermore there is no drip or mess of any kind. There is no loss of product and it is unnecessary to wash or wipe the bottles before they can be labeled, thus avoiding additional labor cost.

There is no reason why manufacturers of liquid products in this day of mechanical perfected machinery should depend on hand labor with its attendant expense, inaccuracies and constant danger of spoilage of packages through discoloration of labels. His needs can be economically met, no matter if he is filling but a few bottles a day or whether he has a production sufficiently large to employ the use of one of the fully automatic machines which fill and cap 140 bottles per minute every minute of the day.

VACUUM fillers are of three types: rotary, tray and automatic feed. On the rotary machine each bottle is handled individually. Every bottle is centered under its filling stem, automatically raised and filled as it travels around the machine independent of the other bottles. On the tray type bottles are placed abreast in trays and rolled on conveyors under the filling head which may consist of from a single to eight stems (feeders). The automatic feed type operates by means of a lever that discharges the group of filled bottles and moves the empty bottles into position under the filler stems.

In general the vacuum system consists of a supply tank, placed below the level of the bottles to be filled, and connecting with the supply tank are the supply pipes or lines. A filling nozzle is attached to each line or pipe, these being parallel. Connected with the supply tank is an overflow receptacle. When the machine is to be

operated the vacuum pump is turned on and started. This feeds a vacuum into the overflow receptacle, which is air-tight. As soon as the vacuum is fed into the overflow receptacle, that in turn feeds a vacuum at the lower end of the air line or suction end of the nozzles.

Around the suction nozzles is a round gasket. The bottle is brought up in close contact with this round gasket, making a positively airtight seal. This immediately creates a vacuum in the bottle, if the bottle is perfect. Should there be a hole in the bottle or leak of any kind, outside air will naturally leak into the bottle rapidly, as the inside air is sucked out.

When the bottle is perfect a vacuum is created in it which puts a suction on the end of the liquid supply nozzles that in turn draws the liquid from the supply tank up through the supply tube and into the bottle. When the liquid in the bottle reaches the end of the overflow or suction air line, it automatically breaks the vacuum, causing a secession of the flow of the liquid into the bottle.

Perhaps one of the most ingenious types of these filling machines is the one which will automatically fill liquids into the modern all-glass sprinkler top type, sometimes called the non-refillable bottle. It is amazing how this wonderful machine will rapidly fill this type of bottle through apertures only one-sixteenth of an inch in diameter, without even a drop of the liquid being spilled to mar the appearance of the bottle or the label.

Various distinct types and sizes of filling machines are obtainable to accommodate the filling requirements of both small and large packers. These include all the variations between the very small and the very large. In every case the machines have been designed to require a minimum amount of human supervision.

For filling semi-liquid and viscous products, certain factors must be observed. Accuracy as to amounts of product must be maintained; air pockets cannot be tolerated in some products; uniform mixture of solids and liquids must be held in some instances and the texture of the material to be filled cannot be allowed to change. The most satisfactory speed for filling containers with viscous material is 60 per minute. There are, generally speaking, two types of machines for this sort of filling—piston and rotary gear—both of which are more dependable and positive than gravity fillers.

IN planning equipment for the bottling plants, discretion must be exercised in holding equipment requirements to a point that will insure all equipment installed being used very nearly to its maximum capacity. A safety margin should always be provided. For medium-size plants there is what is termed the semi-automatic vacuum-filling and screw-capping machine. In the first-mentioned item an operator places the containers on the intake side of the filling machine, pushes six or more on to a lift bridge, then raises a lever which carries the containers up and against the rubber seals; at the same time the filling nozzles descend into the necks of the containers. Almost instantly these containers are filled all to the same uniform height. The operator then lowers the lift bridge and pushes the containers out on to either a rotary table or a motor-driven conveyor, on which they move to the machine for the next operation, for instance, corking.

Corks are automatically fed from a hopper into the container neck and then pressed home by either a rotary wheel or plunger bar. If screw caps are used instead of corks, the containers pass under an automatic feed, where the moving head of the capper picks up the cap, places it on the container and turns it to the tightness desired.

Both of these machines are of the semi-automatic type and will fill, cork or screw cap at an average speed of 30 per minute. The screw capper, in this instance, is fitted with but one head, applying but one cap at a time.

In the larger plants, where production is 200 gross or more per day, fully-automatic machines are used for all of the operations, the vacuum-filling, corking or screw capping. In this case, the labeled container is placed on the intake belt of the vacuum-filling machine by an operator at a speed of from 60 to 90 containers per minute, at least. They are then carried by motor-driven conveyor to the lift bridge of the vacuum-filling machine, which is mechanically raised so that the filling nozzles enter each and every container, the containers being filled to the proper height; the lift bridge is lowered again and the containers mechanically pushed out by the same movement onto a belt back of the filling machine and carried by this moving belt to the next operation. If containers are to be corked, this is accomplished in the same manner as described on the semi-automatic equipment, but at the same speed at which the containers are to be filled.

If screw caps are used, the machine will be fitted with separate heads operating in rotation. This will be necessary to obtain the required speed. An automatic chuck picks up the cap, placing it on a container as it passes by, and automatically turns the cap to the proper tension. This tension is adjustable and easily regulated.

In packing in glass, particular attention and care must be given to obtaining the proper pressure. The ideal type is one that can be easily sealed and resealed. The housewife ordinarily does not use the entire contents of a container at one time and it is an accepted fact that a container that can be quickly unsealed and resealed appeals to her because she knows that when the seal has been first taken off, it can be easily replaced, preventing the spoilage of the food product—with its consequent monetary loss—and the natural annoyance to the housewife.

Rather recently powders have been successfully filled by means of vacuum in much the same manner as liquids are filled by volume. This process is particularly adaptable to certain light, free-flowing, fluffy powders, and in many cases a more solid pack can be put into the container by vacuum manipulation than by mechanical tamping. Great advances in speed have been recently developed with the volumetric method of filling powders, and when specifications lend themselves to this type of machine, production can be obtained as high as 100 to 120 packages per minute.

Transportation of Packages

By J. D. MALCOLMSON

Corrugated and Fibre Containers

A fibre shipping container is a tough, efficient and economical outer package built to withstand the wear and tear of freight, express and parcel post shipment. It is used for shipping all manner of commodities up to a weight limit of ninety pounds. There are two types of these boxes, both equally popular—the laminated walled "solid fibre" box and the cellular "double faced corrugated" box.

The fibre container is an evolution, partly of the ordinary paper carton, and partly of the familiar corrugated straw sheet, used, among other things, as a wrapper for bottles and incandescent lamps. Corrugated paper itself has been in use for some fifty years as an interior packing and wrapping material. More recently, one face and then two were glued to this corrugated sheet to make a rigid board; but it was not until 1903 that experimental freight shipments were made in boxes built from this combined material. Litigation with the wooden box interests ensued and resulted in a victory for the new package. In 1906 the general use of fibre containers for freight shipments was authorized by the railroads, and this marked the real start of the industry.

Economically considered, the fibre box is an important factor in forest conservation, inasmuch as only about one-sixth of its raw material is new wood pulp, the balance being largely reworked waste paper. This waste paper, moreover, usually contains a fair proportion of old fibre boxes which have outlived their period of usefulness and have found their way back to the paper mill. These savings are in addition to the billions of feet of lumber for wooden boxes that are replaced.

The average fibre box weighs only from two to three pounds, which means a reduction of shipping weight anywhere from 10 to 50 per cent when compared with the same size wooden boxes. It is shipped flat when empty, and in this form occupies about one-tenth of the space it will contain when set up.

The fibre container affords a very satisfactory means for shipping fragile articles, as well as heavy commodities of relatively small size. Liquids in glass, for instance, are moved in these boxes with a minimum of breakage. The bottles are usually packed in cells formed by partitions of corrugated fibre board. Another method of packing which is in great demand is the "unit carton" system. Articles such as electric irons, lamp fixtures, etc., are placed in an individual carton, which also contains the necessary accessories. A certain number of these cartons, say two dozen, are then shipped in a container, so designed that the contents exactly fill the box. The advantages of this system are that breakage is practically eliminated, the goods are received by the retailer in an attractive condition for displaying on his shelves, and the customer receives the article with its accessory fittings in a convenient and expeditious manner. Many of the larger box makers maintain elaborate designing departments, which are devoted to the devising of new and better methods of packing. The service is usually offered to shippers without charge.

The advantages of fibre containers are as follows:

First Cost—Being largely made from waste products in large quantities, their first cost is relatively low.

Weight—Tare weights are relatively low, resulting in freight savings on shipments as well as on incoming supplies of boxes.

Convenience—The absence of nails and splinters prevents injury to hands or clothing in packing and invites freight handlers to lay aside their hooks. Its relatively small size, which is controlled by railroad requirements, makes for easy handling in shipment and storage. It is often used as a shelf package and as a "unit package" for delivery to the ultimate consumer without opening and re-packing.

Storage—Fibre containers are delivered flat and are stored in a minimum of space. Approximately ten of these flat cases can be stored in the space occupied by one of them when set up.

Concealed Theft is minimized, as the case, when properly sealed, must be practically destroyed to open it.

Sealing is very economical due to the development of automatic sealing machines which are described elsewhere in this volume.

Advertising—Being a paper product, these cases are susceptible to high grade printing in one or more colors and form a traveling billboard as long as they are in existence.

Sanitary Features—These cases are used new and seldom re-used. Paper linings are not necessary and dust and dirt find no access.

Accuracy—Shrinkage, warping and swelling are unknown.

Conservation—Timberlands are conserved as only a small proportion of the box is new wood pulp, and the discarded box is re-worked into new paper.

Stacking—These boxes, due to the combination of light weight and rigid walls, can be stacked to the roof of most warehouses.

Nomenclature

MUCH time and correspondence is wasted through different ideas of terminology. This is in part due to the rapid growth of this industry which has not had time to evolve a standardized vocabulary.

The following list is by no means complete but it does contain most of the terms which are subject to misinterpretation:

Fibre Containers—The general term which includes both corrugated and solid fibre cases. The words

"fibre" or "fibre boxes" are often used to designate *solid* fibre containers, but this is open to misconstruction.

Corrugated Fibre Containers, or usually simply "corrugated cases," generally indicates boxes made of single strength, double faced corrugated board.

Corrugated Board is a general term and may mean any of the grades named below.

Unlined Corrugated is the corrugated paper alone with no "liners" or "facings." It is usually made of 0.009 in. straw but sometimes is 0.009 in. chip and unless otherwise specified, is the usual or large corrugation, $^3/_{16}$ in. in height. It is used as wrapping material for lamp chimneys, etc., and has the disadvantage of stretching and thus losing the cushion value of the corrugations. It usually comes in rolls.

Single Faced Board has one liner which may be of straw, chip or jute and usually either 0.009 in., 0.012 in. or 0.016 in. thick. It is used for inner packing and wrapping and is usually sold in rolls 36 in. wide, 250 ft. long weighing from 60 to 75 lbs.

Double Faced Board or double lined corrugated, is made with two liners of straw, chip, jute or kraft and is described by the railroads as "single strength." It may be test or non-test board and cannot be rolled.

Double Strength Board is often spoken of as "double double" and "double walled," but the term "double strength" is preferable, as this is the designation used by the railroads. It is a combination of double face and single face, having three liners and two corrugations and is from $^3/_8$ in. to $^1/_2$ in. thick.

Straw Paper or "Strawboard," used for the corrugations, is 100% wheat straw, although rye, oat and rice straw is occasionally used. Strawboard is sometimes imported from Europe, usually from Holland. It is generally made 0.009 in. thick for corrugating, although 0.012 in. or heavier is sometimes used for this purpose. Chestnut waste and pine wood fibreboard is also permitted by the railroads for corrugations, but the production of these materials is small.

Chip, or Chip Board is made from mixed waste papers and is usually 0.009 in., 0.012 in. or 0.016 in. thick. The 0.009 grade is sometimes spoken of as "rag." Corrugated board with chip liners is usually used for interior packing. Chip is also used for the inner plies of solid fibre.

News, or news board, is made of newspapers and is sometimes used in place of chip, though more expensive. The other grades of box board do not enter, to any great extent, in the making of shipping containers.

Liners are the facings of single face, double face or double strength corrugated board. They may be 0.009 in., 0.012 in. or 0.016 in. chip or 0.016 in., 0.018 in., 0.023 in. or 0.030 in. jute or kraft. Solid fibre liners are usually 0.016 in. jute or kraft. "Liner" is also used to describe the interior packing sheet which lines the four sides of a case and which is usually made of double faced chip or straw corrugated board. This liner is usually made in one piece with three vertical creases but unjoined.

Jute is really a misnomer, as jute is no longer used in this industry. A "jute" liner is a mixture of new kraft or sulphate fibres and high grade mixed papers.

All-Kraft Liners—These contain no mixed papers but are usually made entirely of sulphate. They are a new development in the industry.

Solid Fibre is a laminated board built by gluing several plies of board together with silicate of soda and is often referred to as "fibre" or "fibreboard." (See *Fibre Containers*.) The two outer plies are made of jute or kraft. Solid fibre is usually made in 0.060 in., 0.080 in. and 0.100 in. thicknesses as called for in the Classification, but some 0.090 in. and 0.120 in. board is occasionally used for shipping containers.

Single-Lined Solid Fibre—This is not often used for shipping containers but is applicable where only a single bender is required and permitted.

Test and Non-Test Board—In this industry, this usually applies to board that does or does not comply with the railroad requirements regarding bursting strength.

Express Stock—The correct name of this corrugated board is *jute and chip* which describes its construction. At one time this was acceptable for express shipments. The express rules are now essentially the same as the freight rules except that for most items of less than 35 lbs., jute and chip may still be used.

Mullen or Cady Test—These two instruments register the bursting strength of a board, presumably in terms of pounds per square inch. Actually the results are not exactly in these proportions and for this reason many people refer to the figures as Mullen "points" or "units." Both of these instruments are official as shown in Rule 41.

Webb Tester—This instrument overcomes many of the objections to the Mullen and Cady test by testing the liners of double face corrugated board separately, but it is not recognized as official by the railroads.

Rule 41 is that part of Official Classification No. 4 which itemizes the specifications for corrugated and fibre shipping containers when used for freight shipments.

Rule 18—This does the same for express shipments and is a part of the Official Express Classification.

The Bureau of Explosives, 30 Vesey Street, New York City, issues a hand book containing additional express and freight container specifications for dangerous articles.

Food Administration Specifications—These are the same as the so-called *National Canners Association Specification* and specify higher test corrugated and solid fibre cases for canned goods than are required by the railroads. They are therefore unofficial.

Certificate of Box Maker—This is sometimes known as the "Imprint."

The following list is not complete but covers the most important styles of boxes:

Regular Slotted Carton (RSC)—Most containers, especially for freight shipments are made in this style because of the economy of using a straight cut blank. All flaps are the same length and the inner flaps do not meet unless the length and width are the same.

Special Slotted Carton—All Flaps Meet.—Also called "Center Special Slotted Carton." This is more expen-

sive as inner and outer flaps are of different lengths, necessitating an extra manufacturing operation with a loss of stock.

Full Overlap Slotted Carton—Also known as "Full Flap S. C." The length of the outer flaps is the same as the width of the box. The inner flaps may meet, gap or overlap. This style is usually desirable on a long narrow box and gives added strength to any shaped container.

One-Piece Folder—This has flaps at top only and is used to pack flat material such as advertising cut-outs for shipment by parcel post or express.

There are a great many other styles of corrugated and solid fibre shipping containers which are illustrated and described in a free handbook issued by the Paperboard Industries Association, 608 S. Dearborn St., Chicago, Illinois.

Bliss Container—This is a patented three-piece shipping container (two ends and a body sheet) that can be made of solid fibre, corrugated or a combination of both. In the No. 2 box, the flanges on the end sheets are stitched to the body sheet, while in the No. 4 box these flanges are part of the body sheet. The No. 4 style is also known as the *Van Camp* box.

Cracker Caddy—This is a special container. Usually about 10 in. x 10 in. x 11 in., made of a moisture- and greaseproof board combination. It is occasionally referred to as "can" or a "qu."

Silicate of Soda—This is an adhesive sometimes used for sealing containers and always used in the manufacture of corrugated and solid fibre board. Another name is *water glass* and it is generally referred to as simply "silicate."

Point—In this industry a "point" is one thousandth of an inch. 0.060 in. board is spoken of as "sixty point" board.

Height—Depth—These synonymous words indicate the distance between the openings of a box, i. e., from top to bottom. "Height" is preferable as in some industries "depth" means from front to rear. The height of a slotted carton is always the last dimension.

Girth is used in the parcel post specifications and means the distance around the parcel at its thickest part.

Length in these P. O. specifications is the greatest distance in a straight line between two ends.

Nests, or partitions, are slotted half way so that they interlock. A *divider* is simply a vertical pad with no slots.

Star Cut Pad—This corrugated pad has radiating die cuts and is used to separate large glass objects, such as bowls and illuminating glassware. It is also known by such descriptive and imaginative terms as "rat trap pad" and "pie cut pad."

Die Cut Work is made on a special press and the initial cost of the die and extra make-ready must be allowed for. The ordinary fibre box equipment works in straight lines, at right angles, so that other unusual work must be made on a separate cutting and creasing press.

Crease and Score are used interchangeably but "crease" is preferable as "score" may mean a knife cut, as it does in the set-up box industry. Such a cut score is not used in the fibre container industry.

Joint and Seam—The railroads define "joint" as the result of the operation done by the box maker in taking or stitching the fourth corner of the box; and "seam" as the juncture that is closed by tape in the sealing process.

Bales and Bundles—This refers to Section 4 (*b*) of Rule 41 and means that items accepted under this category may be shipped in corrugated or solid fibre containers *without* restrictions as to weight or dimensions.

Printing Plates—Solid fibre is printed from brass plates or electrotypes. Corrugated board is printed from rubber plates which are cast from type or from a wood cut.

Rules and Regulations Governing the Use of Fibre Containers in Transportation

IT is essential that shippers as well as box makers be familiar with the regulations. They are too voluminous to remember but one should at least know where to secure the authoritative data. Below is given a summary of the various regulations.

The more or less voluminous regulations covering shipments in corrugated and solid fibre boxes can be grouped as follows:

1—Freight	4—Dangerous Articles
2—Express	5—Export
3—Parcel Post	6—Army and Navy

Many of the details in these rules apply only to the way in which the box must be made, and are not of particular interest to the shipper. Buried in the mass of material, however, are a lot of little jokers that are highly important to him, but it sometimes takes a minute study to uncover them.

Freight—The "Bible" under this heading is the Consolidated Freight Classification No. 5, issued Oct. 1, 1927, effective Dec. 15, 1927—a formidable volume of 500 closely printed pages. This is issued in two sizes—one about the dimensions of a telephone directory and the "photo-reduction edition" about 5 in. x 7 in. x 1 in. You can get either size for a nominal sum by writing to the Official Classification Committee, 143 Liberty St., New York City, the Southern Classification Committee in Atlanta or the Western Classification Committee in Chicago. The subscription includes the various supplements which are issued from time to time—also in photo-reduced form if desired You should look over each supplement and make the necessary corrections in the large volume. A point to bear in mind is that most of the supplements consists of "re-issues" and where this word occurs it means that the change has already appeared in a previous supplement so you can skip these lines, if you have kept things up-to-date in the past.

The well-known "Rule 41" of the Classification gives all the rules for manufacturing and sealing corrugated and solid fibre containers and the book also lists all commodities, telling you how each may be packed. Thus, "In Boxes" means corrugated and solid fibre as well as wooden. "Bales" or "bundles" means oversize boxes with no weight nor dimensions limits, provided the case is roped or steel strapped. "Packages" is an undefined term occasionally encountered and is similar to "bales" and "bundles" except that the use of straps is not compulsory; and one item permits the use of 0.060 fibre "cartons" without dimension or weight limit. Some shippers like to strap several small fibre containers together to make a single unit. There is no rule against this but each individual box must conform to the requirements of Rule 41. "Wrapped in Fibreboard" is another definition applied chiefly to special forms of packing for furniture.

The commodity list is very complete but some ingenuity is often required to locate your particular item—this in spite of a good cross index. For instance, cylinder blocks, baby carriage bodies and wheel-barrows all come under "Vehicle Parts." Wearing apparel comes under Clothing, but if the goods have not yet been manufactured into wearing apparel, they are listed as Dry Goods, which also includes cotton piece goods, blankets, etc. The committee members, however, are very good about helping you out if you give them a ring or drop them a line.

Shippers are constantly applying for changes in the rules. Such applications are listed from time to time in a published docket and hearings are later held at the three cities mentioned, to pass on these applications. Very conclusive evidence must usually be presented to effect a change, and "shipping history" plays a large part in this evidence.

Express—These regulations are governed by the Official Express Classification No. 30 issued in November, 1926. This is a small 60-page pamphlet with two supplements to date. Only two supplements are in effect at any one time. Rule 18 describes fibre containers and is modeled very closely after the freight Rule 41, the principal difference being that the regular dimension limit is raised from 70 in. to 90 in. and the specifications for packages under 35 lbs. are much less severe than for freight.

Parcel Post—The post office rules are not as definite as those for express and freight. Form No. 3841 recommends the use of corrugated boxes for a number of listed commodities but specifications other than "securely wrapped" are not given. The usual parcel post weight and dimension limits apply. In case of doubt it is always best to submit the complete package to your local postmaster for approval.

Dangerous Articles—These come under the jurisdiction of the Bureau of Explosives, 30 Vesey St., New York City, and include such items as inflammable liquids, "strike anywhere" matches, fireworks, etc. The regulations are covered by a 380-page "Pamphlet No. 9" dated December, 1922, and by numerous later supplements. This pamphlet is badly in need of revision as the indexing and page numbering systems are very confusing. Moreover, the supplemented changes have now become so voluminous that the pamphlet has completely lost its original make-up. An important thing to remember is that the freight and express classifications list and rate dangerous articles, without any intimation that they require special packing. In case of doubt, it is therefore wise to study the Bureau of Explosives rules first, as the method of packing such articles is considerably more expensive than indicated by the ordinary freight and express rules.

In this classification, an "inflammable liquid" is one with a flash point at or below 80 deg. F. An immense amount of correspondence back and forth would be avoided if shippers of doubtful liquids would always mention the flash point of their product when making inquiries for shipping containers.

Forbidden Articles—A number of articles are forbidden for all of these transportation methods. These include certain explosives, chemicals and products susceptible to spontaneous combustion.

Export—There are no uniform rules for fibre containers for overseas shipments. Each steamship line makes its own rules and the stringency of these depends somewhat on the intensity of competition at the time the rules are made. The Paperboard Industries Association has done much valuable work in keeping these regulations within reasonable bounds and hopes eventually to help standardize them.

Army and Navy—During the War, the U. S. Army adopted certain specifications for fibre containers to be used in making shipments, particularly of canned goods, to training camps. This was done under the auspices of the Food Administration. At present the Navy has in effect Bulletin No. 65 C 12, effective February 1, 1926, and revised September 1, 1926. This is modeled after Rule 41 and a copy can be secured from the Supply Officer of any of the navy yards.

Conclusion—This set of regulations makes a formidable array but a great deal has already been accomplished in the direction of uniformity. It is to be hoped that this standardization will be kept in mind by the powers that be, when they make future changes or additions.

Patented Types of Fibre Containers

THE passing of the years has seen an almost endless number of unusual boxes, patented, advertised and finally forgotten. Most of these are either impractical or too expensive for the purpose intended. Those in the limelight at the present time are:

The Reinforced Score Box—A corrugated container with a strip of tape glued over the score-line, either on the inner liner or inside the board. Three different companies have patents on variations of this idea.

The Reinforced Tape Joint, in which the ends of the tape on the manufacturer's joint is split and tucked under at each end.

Burlap-Covered Box—This is a corrugated box with an outer covering of burlap cemented on with asphalt. This box, because of its strength and moisture-proof qualities, is suitable for export use.

Recessed End Box—The ends of this solid fibre box, being recessed, are strengthened by the resulting stitched rim.

Bliss Box

A fibre container designed by the H. R. Bliss Co., Niagara Falls, N. Y. This is a three-piece box made of fibre board—so constructed that the corners are doubly reinforced, which the designers claim are the vital points where resistance against shocks are so needed. It is pointed out that in transit the most severe blows occur at the corners due to the dropping and jolts of the case. To add to its strength at the corners, the double thickness of fibre board is securely wire stitched. This offers rigid support which prevents buckling.

Particular attention is paid to the grain of the board which runs in vertical direction on the side; and on the ends, it runs in the direction best suited to the packing conditions. It is claimed that this combination of grains adds strength and lessens the chance of tearing the end seams in handling. The boxes are closed by wire stitching or can be sealed by an adhesive.

It is stated by the designers that this construction of the box reduces the amount of board used by an average of 10 per cent. The lighter box thus reduces the freight charges. At the same time a strong box is afforded. The containers are well suited for export shipment and bulk goods, the manufacturers state. They are made in any style to fit the particular specifications that the shipper needs.

Machinery has been designed to handle these boxes in both the setting up and sealing operations. This is also supplied by the H. R. Bliss Co.

Sealing

IMPROPER sealing will spoil the best fibre container made, yet an inspection of any freight terminal will show that there are still many of these instances despite the number of words that have been written on this subject. One reason for this condition is that so much still depends upon the human element, especially in the packing rooms of new users and small shippers. In the larger plants, mechanical sealing, which is so rapidly increasing, is doing a great deal to insure correct and efficient closures. The secret of proper sealing is to bring the flaps into contact with each other. Notice the opened flaps of any corrugated or fibre container. The unadhered portions usually have a smooth, glassy appearance, which proves that the adhesive has dried without being in contact with the other flap. Yet a little attention to this point will greatly increase the area in contact. In a series of drum tests of canned goods recently made, less than one per cent of 1300 boxes tested failed through opening of the flaps. This shows what careful attention to this operation can accomplish.

Fibre containers are closed by these principal methods:

Adhesives	Stitches or Rivets
Gummed Tape	Steel Strapping
	Rope or Twine

Sealing methods can be divided into three groups, hand, mechanical and automatic.

Hand sealing requires no initial investment but, except for very small production, is expensive and nearly always inefficient. The flaps at one end can be held together with the weight of the contents and the top flaps pressed together by some sort of a heavy weight. A better plan, however, is to have the carpenter rig up a simple stand consisting of a hinged platform over which to slip the box and some sort of cam and lever arrangement with which to apply pressure to the glued flaps.

For greater production, semi-automatic sealing machines are obtainable. Most of these styles are characterized by two endless belts top and bottom, motor driven, which draw the box through the machine. The compression is gained by coiled springs behind each roller. The operation is intermittent, allowing the boxes to remain under compression as long as possible. Lateral pressure is applied as the box enters the press, insuring the close abutting flaps which are so necessary to a well-sealed container. One man seals both ends of the container in one operation.

This labor saving is quite apparent when compared to hand sealing of bottoms and tops separately. Excessive handling is eliminated because the containers move away from the packing end of the machine. Roller conveyors can take the sealed containers direct to the freight car or warehouse, as shown in the accompanying illustrations. These machines have varying capacities, depending on the length of container, size of sealing press and nature of contents.

THE modern full automatic sealing press has been so perfected that it will seal from 50 to 1500 cases an hour, depending on conditions. One of the large soup canners is regularly putting 1500 heavy cases an hour through this machine and a glass company has even reached a figure of 1800 per hour, although these are light weight cases carrying empty glass bottles and jars.

The cases are packed with the bottom flaps simply folded into place. They then roll on a gravity conveyor to the front end of the automatic machine where they are permitted to enter one at a time by a positive timing device. The top and bottom outer flaps are then automatically folded out and coated with a thin even film of adhesive, after which they go back into place without disturbing the contents. They then traverse a compression unit similar to those already described. An ingenious attachment causes the adhesive to be applied only where the inner flaps will come into contact, thus insuring that none of it will touch the contents.

Many "tricks of the trade" have been evolved by practice but have not found their way into print. For instance, double strength corrugated boxes can be sealed efficiently if the corners of the outer flaps are folded or broken down slightly before sealing. This allows the corners to come into contact when under pressure. Otherwise double strength board is hard to seal efficiently as the corners do not stick and are liable to be hooked loose in later handling.

Hand sealing is less awkward if one outer flap is held down at an angle of about 45 degrees, which keeps the inner flaps flat and in position to receive the adhesive brush. Use a large brush, say 4 in. Hand sealers in one plant were observed using a small brush and taking from 10 to 12 strokes to apply the adhesive to one end. Instruction and a larger brush reduced this to two strokes—a small matter perhaps, but quite a saving in time in a year.

Warping often causes trouble in sealing due to loss of contact. Containers should not stand around longer than necessary before packing and sealing because atmospheric conditions may warp the flaps. They should be left in the original bundles until ready to use, or at any rate, kept in large storage stacks.

The hardest box to seal is one whose contents do not fill the box and there is nothing to "seal against." Sometimes turning the box upside down lets the contents aid in securing contact of the top flaps.

Stitching

STITCHING the flaps together is an important method of sealing corrugated and solid fibre containers. There are many different types of stitching machines such as those used for making books and set-up boxes. These are usually manufactured by the makers of shipping case stitchers and it is only these latter styles that we are concerned with here.

Stitching Methods—Possibly 95 per cent of all stitched containers are solid fibre. Corrugated board because of its resilient nature is more amenable to tape or adhesive sealing although a great many stitched corrugated boxes are shipped every year. The usual practice is to stitch the bottom flaps of corrugated or solid fibre containers and to glue the top flaps. Such a box has many advantages. In the first place it is often difficult to glue securely the bottom flaps of an empty container unless one is equipped with a proper bottom sealing press. In such instances the top flaps of the packed box can be easily sealed by applying adhesive to the flaps and then rolling the box over so that the weight of the contents will give the necessary sealing pressure. The empty box with the bottom flaps stitched up forms a convenient tray or container for transferring from one department to the other during the packing operation. In this form it is also used as a "re-shipper" for carload shipments of empty bottles or cans from the glass factory or can maker to the purchaser of these inner containers who then uses the same boxes for his own shipments.

Stitching machines occupy such a small space that they can be placed in advantageous positions near the incoming box.

Storage—Boxes can be bottom stitched only as required, thus saving space. Many large shippers use this system although others, who formerly did, have adopted the automatic adhesive method of sealing top and bottom flaps simultaneously.

Stitching is more nearly "fool proof" than any of the other closing methods as each stitch is a positive joining of the flaps. Female help or inexperienced operators can be used, and no "setting time" is necessary; nor is tape needed.

Stitched cases are generally used where it is necessary to open and re-seal the case in transit. Thus, shoe jobbers often have to change the assortment of sizes before sending the box out to the dealer. In such cases the stitches can be withdrawn by a screw driver and replaced with a top stitcher.

Styles of Boxes Used—Most stitched containers have an overlap on the outer flaps of one inch or more and this is required if the small flaps are over six inches apart (a one-inch overlap means an extra one-half inch added to the blank and this extra material cost must be taken into account in any consideration of relative sealing costs). If the box is over sixteen inches long it should have a two-inch overlap. One row of stitches down the center of the flaps is required on an overlap box. If no overlap is used, two rows are necessary here.

The large flaps are usually stitched outside but often the small end flaps are out. This latter makes a stronger box for certain commodities such as canned goods where the cutting action of the can chime is most apparent at the ends of the case. Some shippers have the box maker's certificate printed on both large and small flaps so that either can be used as outers. Occasionally the "criss-cross" method is used—one short flap outside and the other inside.

Style of Stitching Machines—There are two main types of stitchers, bottom sealers and top sealers—combination machines are also made which will do both. The bottom sealer, which is the most important, consists of a metal post about 40 in. high which acts as the anvil for clinching the stitch. This post is hinged at the bottom. Stitchers usually occupy about 5 square feet, weigh 500 or 600 pounds and cost about $400 or $500 when motor driven. This motor need only be about $1/6$ hp. and operates from the lamp socket. Some types are belt driven. The average stitcher will drive from 200 to 300 stitches a minute and is quickly adjustable to stitch thicknesses of from $1/32$ to $1/2$ in. Small variations in thickness are automatically compensated for. The machine is actuated by a foot treadle and the action includes drawing the wire from the spool, cutting it, forming, driving and clinching the stitch. The stitch is formed on a mandrel and the size of the clinch is adjustable. An experienced operator can bottom stitch from 1500 to 2000 cases a day.

The general form and method of using these ma-

chines are as follows: The folded boxes are opened and squared up by the operator. The supporting post is drawn back by the treadle for insertion of the box. Another treadle actuates the stitching which is, automatic, allowing all of the operator's attention to be concentrated on the location of the stitch. On some makes, this supporting post swings sidewise so as not to interfere with the operation and the treadle can also be folded up out of the way when not in use. Replacements and adjustments have also been greatly simplified in recent years.

Top stitchers have the same mechanism as bottom stitchers but use a blade anvil in place of the post. This looks like a sword with the flat side up. The end of the box nearest to the operator is first partially stitched. Then the box is reversed and the opposite end completely stitched. The first is then finished up as the blade is withdrawn. This means that the last two stitches cannot be within $2^1/_2$ in. of each other and the classification, therefore, makes allowance for this condition. The filled box is supported on an adjustable table usually equipped with movable balls for the easy reversing and moving of heavy cases. Stitcher sizes are described by the dimensions of the head. For instance, a 20-in. head type top stitcher will probably stitch boxes up to 16 in. in length and a large 30-in. type will take a box 27 in. long. These are with no overlap. With an overlap, boxes of almost any reasonable length can be stitched.

Combination machines have a removable post, folding blade and swinging work table and are useful where a shipper desires to stitch both tops and bottoms of his fibre containers, but does not have a large enough output to warrant the purchase of two separate machines. They have a capacity of 400 to 500 cases a day.

Stitching Corrugated—The earlier types of stitchers were not very successful on corrugated as they crushed the board too much and the stitches had a tendency to pull out. This type of sealing now gives no trouble due to several improvements, such as pointed stitches inserted at an angle and so clinched that the points are driven into the board without crushing the corrugations. This gives a positive lock and has even been used successfully on double strength board. This burying of the clinch (even on solid fibre) prevents the wire from damaging or rusting the contents. Bottom stitching only is used for corrugated boxes.

Wire—This is usually "copperized" box stay wire calipering from 0.017 inch to 0.020 inch and runs from 1800 to 2100 stitches per pound. Figuring the wire at from 8 to 10 cents a pound the cost for stitching is from $1.00 to $1.50 per thousand boxes. The wire comes on wooden spools and many large shippers use aluminum spools on the machine. The wire is made of iron with copper colored lacquer coating which is not always rust proof. For this reason galvanized or tinned wire is sometimes used. Solid copper has been experimented with but the cost is prohibitive. Wide wire, ribbon shaped, is often used for sealing corrugated boxes and some of these staples have been observed one half an inch wide.

Other Uses—In addition to sealing one-piece boxes, stitchers are used in this industry for making up telescope boxes (including suit boxes) assembling 3-piece containers such as the Bliss and Van Camp styles and for sealing bottoms and making up the covers of the popular moisture-proof cracker caddy. Essentially the same style of machines are also used by the box maker for stitching the "manufacturer's joint."

Metal Strapping

THE application of metal strapping to fibre containers is a relatively new development and was started by a short clause written into the freight Classification within the past few years. The principal uses of metal strapping on fibre containers are:

1. Bundles and bales as defined by the freight classification.
2. Packages composed of several light weight outer containers strapped together.
3. Packages with heavy weight contents where the bursting thrust is excessive.
4. Packages to be safeguarded against pilferage.
5. Odd shaped containers.
6. Export boxes.

There are three principal steel strapping systems applicable to fibre containers. The straps are tightened and sealed by various methods. Omitting the technicalities of these methods as outside the province of this article, it will suffice to say that the ends of the strap are usually clamped together with some sort of separate metal seal. This seal can often be lithographed with the shipper's name or embossed with his package number, thus affording a positive identification and seal. In one make the straps when crossed can be sealed at the intersection in an interlocking combination which prevents side slipping. Some makes have separate tools for applying tension, crimping the seal and cutting the strap. At least one style does all these operations with a single tool. Perhaps the very latest development is the use of spot welding for joining the ends of straps, in place of crimping with a seal.

As regards the strap itself, many experiments have shown $^3/_8$ in.-0.015 metal is best for fibre containers. Straps less than $^3/_8$ in. in width have a tendency to cut through the board and the gain in this matter from using greater widths than $^3/_8$ in. is not commensurate with the increased cost. The straps naturally cannot be applied as tightly as in the case of wooden containers, but should be tightened just sufficiently to bite into the edges, so that they will not slip sideways. This, by the way, is the big disadvantage of cord.

When the contents are of a hard, solid nature, the strap should, of course, be drawn tighter than in the case of loosely fitting or fragile contents, as this serves to tie the contents together in such a way that they will resist a surprising amount of rough handling, even after the container itself has started to break. Where the

contents are of a fragile or yielding nature, it is often worth while to slip buffers of corrugated or fibre board under the strap at the edges.

FIBRE containers are usually sealed with adhesive or tape, or both, before applying strapping. Strapping alone can be used, however, especially when the outer flaps have plenty of overlap and the contents are solid and firm, such as canned goods. The use of wax seals on valuable contents, such as silverware, can also be dispensed with when straps are used.

The regular slotted carton style is often strapped but it is usually preferable to have the outside flaps made with a 1-in. overlap. This is particularly true if no adhesive is used. Long boxes opening at the ends (such as for automobile bumpers), should have a full overlap. Another popular style is the "full telescope," as the depth can be varied while the straps will still keep the contents from shifting. The three-piece box is also well adapted to strapping. The body of this box consists of an open-end tube and the ends are formed by telescope covers extending two or three inches over the sides. If necessary the depth can be varied by cutting down the body. Two crossed metal straps provide all the sealing needed.

Often several relatively small corrugated or fibre containers are strapped together to make an easily handled shipping unit, to give added protection to fragile contents or to reduce transportation costs. For instance, one of the branches of the General Electric Company receives solid carloads of lamps from the factory and re-ships these in smaller lots. Many of these corrugated boxes weigh from three to six pounds only each.

The minimum weight for express shipments is ten pounds. By strapping several of these boxes together, expressage is paid only on the actual weight shipped. Several sizes of boxes are often strapped together and "lot shipments" arrive at destination intact with no lost sheep "to follow." Because of the light weight, no wooden ends nor fibre buffers are necessary. Two straps, crossed, are used.

Dead weight articles, such as bolts and nuts, are always expensive to pack. When dropped, the box often breaks with explosive force. Metal strapping is a valuable reinforcement in such instances.

Concealed losses due to pilfering run into large sums annually, although marked reductions in these losses have been made during the past few years and much of this reduction is due to the use of sealed metal strapping.

Many objects are difficult to pack because of their odd shape and when packed it is sometimes difficult to seal the container and to deliver it to destination in good condition. In such cases the proper use of steel strapping often solves the problem.

Automobile bumpers are usually shipped in long, narrow, solid fibre containers either end-opening or "five panel wrap" style. Both of these are difficult to seal with the usual methods and for this reason metal strapping is nearly always used to close these packages. When drawn up tight, the straps keep the heavy bumpers from punching through the ends of the package.

The export field has so far been little touched by corrugated and fibre boxes, but it is undoubtedly destined to play a big part in the future of the industry. One of the chief things that has retarded this development has been the attitude held by the steamship lines that the domestic type of these packages is not sufficiently rugged to withstand overseas shipment. Also the steamship companies lack the uniform classification standards that have been developed by the railroads.

With the increase of competition among ocean carriers, however, definite rules will soon have to be laid down regarding such shipments. Doubtless, these rules will include the use of steel strapping.

Gummed Tape

IF there is one subject on which the public, from box manufacturers and tape mills to shipping clerks and packers, need instruction, it is on how to get proper results from sealing tape. Many mistaken notions are prevalent. The result is that many shippers get better results from sealing tape than from any other form of closure, while there are other concerns whose taped packages are not what they should be.

To make taped fibre shipping cases safe, it is of utmost importance to make the gummed tape stick tightly. To do that the tape must be *correctly moistened*. Unfortunately, this important factor of tape moistening is often neglected in shipping rooms and also by those higher up, who do not realize its value in preventing damage to or loss of goods in transit.

When a strip of sealing tape has been applied to a carton or package, it should stick so tightly that it becomes practically a part of the container itself. Moreover, the tape must stick over its entire surface, not just in spots here and there; as that would seriously weaken the package.

To accomplish this is easier said than done. Devising a machine which will invariably deliver strips of tape moistened just right, and over the entire surface of the tape, has proved to be far more difficult than was at first expected.

Let us consider a moment what a good tape moistening machine must do. During rush hours in shipping rooms, packages and cases are sealed at top speed. Each lineal inch of tape touches the moistening element about one-fortieth of a second of time. The "first time over" must do the job correctly or not at all. The tape is slapped on the carton, rubbed with one or two quick motions—and in that brief instant it must grip tightly enough to hold the container, if necessary, during a trip across the continent. The box will not stand quietly on a shelf for several weeks but will get rough handling. The crushing and scraping in transit frequently pulls nails out of wooden shipping cases, yet tape must not work loose. It must *stay* stuck.

Some shippers do not realize that tape can stick for a

few hours and look perfectly secure, and then suddenly give way. This trouble is usually the result of moistening the tape only in spots or it may be caused by overwetting of the tape or not moistening it enough.

The safest plan is to use only thoroughly reliable tape dispensers. The best machines are those which eliminate the human factor from moistening entirely, making the operation of the moistening unit of the machine entirely automatic.

NO matter what type of moistening device a shipper may choose, the main thing to remember is the great importance of the moistening operation in making a safe shipping container out of corrugated box or the paper wrapper, as the case may be. The value of the merchandise and ordinary corrugated box runs from $1.00 to $20.00. Moistening the tape can never cost more than a tenth of a cent, but that fraction of a cent can make all the difference between losing the $20.00 merchandise or having it arrive safely and in good condition at its destination.

The glue of various brands of gummed tape varies, especially as regards solubility. A little study will show the proper amount of moistening for any one make. Too much water may remove a very soluble glue and lead to blisters, while not enough water may fail to soften a harder glue. Some tapes have such hard glue that complete immersion works best. Only first class moisteners should be used. Heavy kraft paper tape, while strong, is stiff and difficult to adhere properly and thoroughly. A very thin tape is more foolproof but weaker. For these reasons gummed cambric makes a wonderful seal besides being very resistant to tearing and friction. However, it can be easily peeled off by a thief and a fresh piece replaced, so for this reason the railroads have recently forbidden its use in sealing. Well-adhered kraft cannot be removed without tearing.

Springy flaps will cause tape to slip a little before the glue has set, resulting in looseness and wrinkled tape. This can be overcome by first folding the flaps inward or by holding them down hard until the glue has set or can be done mechanically by slipping the freshly sealed box under a home-made adjustable wedge-shaped board or frame which will hold the flaps of one box down until it is pushed on by the next box.

Many packers run the tape 6 in. down the ends of the box or even all around. The Classification calls for $2^1/_2$ in. and if properly applied this is enough. We recently observed a shipping room putting an average of 6 in. of 3-in. tape down the ends of the box and turning out 200 boxes a day. Reducing this to $2^1/_2$ in. made a saving of $435 a year. In most cases, where 2-in. tape is indicated under the rules, this width, properly applied, is ample.

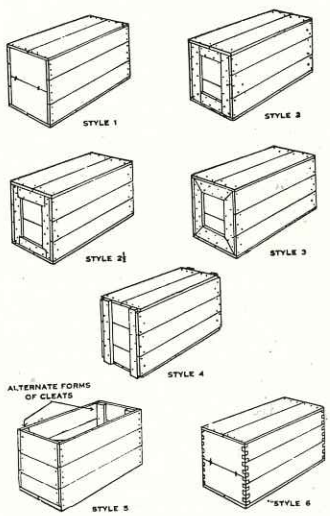
Many shippers use tape and adhesive together when the latter is sufficient to meet railroad requirements. From a carrying standpoint adhesive alone is ample but the extra tape may be worth while as an identifying seal or as insurance against inefficient labor. One firm made a saving of $2230 a year by omitting this extra tape which was being used through ignorance of the Classification requirements.

An occasional visit to the shipping room by one experienced in such matters is well worth while, as he can often point out economies and can compare your procedure with the Classification requirements which are often quite complicated. This is especially true in the case of relatively small companies or those who have only recently adopted the fibre container.

Wooden Boxes

THERE are seven forms of nailed wooden boxes so universally used that they may be called the standard styles of nailed boxes. These boxes can be adapted to a wide range of uses, and it is the experience of the Forest Products Laboratory that in meeting the majority of packing problems they are the most efficient of the nailed boxes. The advantages and disadvantages of each style, as revealed in laboratory tests and observations of boxes in commercial service, are given below.

In style 1, the grain of the ends and sides runs approximately parallel to the top and bottom surfaces. One of the common failures in this type of box is splitting of the ends and sides, or failure of the joints in these parts, since the only resistance to such failure lies in the strength of the joints, if present, or in the strength of the wood in tension across the grain, which is not large and is extremely variable in any species of wood. The smaller holding power of nails driven into end grain as compared with side grain is another source of weakness.



To improve on style 1 ends, and guard against the liability of complete failure from splitting of ends and sides, rectangular and sometimes triangular corner cleats nailed or stapled to the inside of the end (style 5) are added when the character of the contents permits. This construction does not increase the displacement of the box and is, therefore, not objectionable in that respect. If these cleats can be made large enough, the sides may also be nailed to them, which, of course, increases the strength of the nailing at this point. These inside cleats should be shorter than the inside depth of the box, so that if the sides and ends shrink, the cleats will not cause an opening of the joints. In all boxes with cleated ends, the nails or staples holding the cleats to the ends should be long enough to permit a good clinch, and should be spaced approximately the same as the nails in the adjacent edges of the wooden box.

The most common method of preventing box ends from splitting and of supplementing the holding power of nails driven into the end grain is the addition of two outside cleats on each end as shown in style 4. These cleats should be of the same thickness as the end, so that when setting up the box the same size of nail may be used in them. The nails should be staggered in the ends and cleats; this permits a closer spacing of the nails and results in a stronger joint than is obtained by driving the nails in a single row. The holding power of the nails is supplemented most effectively by the use of denser woods in ends and cleats.

THE cleats in style 4 boxes should be long enough to come nearly flush with the outer surfaces of the top and bottom. They will thus aid in keeping the top and bottom in place and will also take some of the thrust which comes on the nails in the top and bottom when the box is dropped on a corner. If the cleats are made to come exactly flush with the outer surfaces of the top and bottom, and shrinkage occurs later, it may cause the ends of the cleats to project beyond the top and bottom, and they may be pulled loose if the box is handled so that they catch on some object. The amount that the cleats should be cut short to allow for shrinkage depends on the moisture content of the lumber at the time the box is constructed and the storage conditions afterward. Usually an allowance of from $^1/_8$ to $^3/_{16}$ in. at each end will be sufficient.

The addition of the two horizontal cleats in styles 2, $2^1/_2$ and 3 permits a reduction in the thickness of the end boards from the thickness of the cleats to that of the sides, top and bottom, in which case all the nails should be driven into the cleats. Or the cleats and end boards may be the same thickness and the nails staggered in two rows. The usual failures in these styles of boxes are pulling of the nails from ends and cleats, shearing out of the nails to the ends of the sides, top and bottom, and splitting of the end boards along the inner edges of the horizontal cleats, which allows a cleat with part of the end board to pull away with the top or bottom. The resistance to failure by splitting of the end is due to the strength of the end board in tension across the grain, supplemented by the action of the vertical cleats. In nailing or stapling the vertical cleats to the ends in styles 2 and $2^1/_2$, it is possible to get more nails near the top and bottom edges of the box than in the mitered cleats of style 3. This more effectively prevents the box end from splitting along the horizontal cleats.

Style $2^1/_2$ has the advantage that when the bottom and top are being nailed to the cleats, the notches or steps in the vertical cleats will take the thrust that otherwise would come on the nails holding the horizontal cleats. This thrust is sometimes very severe, especially when several nails are driven at the same time into a cleat made of dense wood.

In manufacturing boxes with square ends, style 3 has the advantage that all four cleats are the same length, hence interchangeable. When a very symmetrical end is desired, rather than the strongest end, the mitered cleats are preferred.

The box shown in style 6 has sides and ends joined together by a series of tenons, called "locks," which interlock and are held together by gluing. The top and bottom are usually fastened by nailing. The lock corner, if properly glued, gives a more rigid box than nailed corners, there being no appreciable distortion before failure occurs. Tests show that many failures in lock-corner boxes occur because ends and side split, nails pull from or split the edges of too thin ends, locks open and matched joints lack sufficient strength.

The Plywood Box

PLYWOOD is a combination of two or more thin sheets of lumber glued together, with the grain of one ply at right angles to the adjacent face or faces, and therefore tends to equalize the strength parallel and across the grain. For that reason the thickness of the lumber used in the body of the box may be reduced as much as 75 per cent without any loss whatever in its serviceability.

Lumber does not shrink with the grain, but across the grain. It shrinks about 8 per cent from a green to a dry condition. If dry and subjected to humid conditions it swells. The shrinking or swelling of plywood in length and width, due to the cross banding of the grains, is so minimized that it is of no consequence and the warping and twisting of the plywood panels in boxes is eliminated.

Plywood adds to the complications of manufacture of wood boxes. This sheets of veneer of a predetermined size are cut from logs on very powerful lathes. This veneer is then kiln dried in large kilns which operate continuously night and day. The material is next taken to the gluing-up room, where glue is spread upon the surface by a mechanical spreader. The glued veneer sheets are then placed in a hydraulic press with heavy three-ply oak boards inserted between each of several layers, and a heavy pressure is applied. This pressure holds the panels perfectly flat and is maintained for a period of hours by the use of turn buckles and I-beams applied while the wood is in the press. After the panels are thoroughly dried, they are trimmed to the desired size and are either nailed by nailing machines or stapled by large staplers driving long metal staples through the veneer into the reinforcing cleats. The ends of the nails and staples are clinched.

Plywood boxes may be made in a great variety of styles. Each box part is marked, indicating whether it be the end, side, top or bottom, and as each box part is complete, there are but six pieces or parts to be nailed together, thus simplifying assembling.

The thicknesses most generally used are $^3/_{16}$ in. and $^1/_4$ in., these being substituted for lumber up to 1 in. in thickness. It is possible, however, to make plywood in greater thicknesses or more plies than three, where conditions require.

The uses of plywood boxes are infinite. Plywood

cases are used for cottons, woolens, prints, worsteds, blankets, yarns, hosiery, underwear, silks, gloves, corsets, shoes, buttons, soap, confectionery, silverware, rubber goods and wherever a wooden box is required. Special cases are made for talking machines, tires, silverware, boots and shoes, hats and other articles.

The Wire Bound Box

The wirebound box is a container made from thin material, usually lumber, bound with two or more strands of steel wire and stapled or nailed to a strong framework of wood. This box, in its knocked-down form, consists of only three separate parts, the box-blank and the two ends; the box-blank, or mat, comprises the consecutive faces, top, side, bottom, side, connected only by the continuous steel binding wires.

Labeling Machines

(*Continued from page 52*)

"spot" the label in a determined position in order that every package will be labeled and look alike with respect to the lettering in the glass. Previously this was done by hand or on semi-automatic machines where the best was a good guess at the proper spot for the label. Some manufacturers have discarded their trade mark on the bottle because of the inconvenience in placing the label accurately and automatically. To bring more forcibly to mind what the spotting labeler can do, just stop to look at the "Vaseline" and "Listerine" bottles in your medicine cabinet. Such bottles can now be adopted where the name of the product is in the glass to tell you what it is after the label is destroyed and with the knowledge that they can be properly labeled by fully automatic machines.

Regarding the quality of the labeling done by hand and by machine, we often hear a manufacturer say that no machine can do this work well enough. Let us illustrate by referring to the labeling of cigar boxes which are perhaps some of the best labeled packages in our showcases. The labels are beautiful, of many colors, embossed and cut neatly and accurately. Until recently they were applied by hand, which almost ruined their good appearance and lustre. Because—paste was used instead of glue it soaked the label and destroyed the colors. Then it was placed by hand and wiped on with a rag which killed the embossing and smeared the colors. Today the automatic machine applies thin glue quickly, applies the label at once and places it even more accurately than the hand. The result is that the moisture in the glue does not have time to penetrate the label, therefore the embossing and colors remain just as the printer made them.

Incidentally, it might be said here that 95 per cent of a cigar box can be made on automatic machines which insure their uniform shape and size just as the machine made bottle is uniform, which requisite is most important for machine handling. Unless uniformity in size and shape is obtained, efficient labeling is impossible.

WHERE full length labels which overlap are applied to round containers, the universally known automatic round package labeler is in general use, one type of machine being for hermetically sealed, friction lid and screw top containers while another is for slip cover containers. One or the other types of machine are employed in the food packing and kindred industries, including paints and specialties and the other in most of the coffee plants as well as several salt factories. Cans with ears such as large packages of paint are also automatically labeled through utilizing a full length label which overlaps and is died out to encircle the ears, this supplanting the front and back label formerly used. Glass containers have also come within the scope of the automatic round container labeler, nationally known products like Sal Hepatica being labeled on this type of machine as well as glass containers of insecticides, toilet preparations, fruit juice, etc.

This type of machine can operate at a speed of from 150 to 250 or more packages per minute because of the fact that the packages are rolled through and a comparatively simple and speedy form of mechanism can thus be utilized, hence the automatic round package type of labeler is the speediest mechanical medium available and fulfills all the necessary requirements.

MODERN factory practice has demonstrated the importance of machine production and that manufacturer is wise who leaves no stone unturned to place all of his manufacturing on a machine basis. The use of machinery in the finishing or packing department is as important as in the actual processes of manufacture and the manufacturer who extends his machine methods to these departments is bound to profit more than the one who does not.

In general, a labeling machine can be equipped with attachments to handle a manufacturer's package without alteration but occasionally a minor change in container or label will simplify the work and enable the labeling to be done with a minimum of care. Where new packages or labels are designed it is well for the manufacturer to bear in mind a few simple facts that will enable him to favor the labeling machine and to operate under the most ideal conditions. The best labels are made from thin paper, soft and comparatively light in weight so that they will conform easily to the shape of the container. The surface of the container should be such that the label will naturally follow the contour without wrinkling. A spherical surface is impossible for the label must curve in two directions and will not lay smooth. Where hexagonal, octagonal or similar containers are used the size of the label should be such that the edges of the label should extend well over the corners of the container and on the flat sides to prevent the edges of the label from becoming loose after the label has been wiped on and the container removed from the machine.

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219 - 36th Street, Brooklyn 603 Stewart Avenue, S. W., Atlanta 200 Davis Street, San Francisco 114 Railroad Avenue, So., Seattle

Manufacturers of Galvanized Stapling Wire, Package Reinforcements and Bundling Equipment

STAPLING WIRE:

Acme Silverstitch, the galvanized stapling wire, is made in four thicknesses: .014, .017, .020, and .023.

It is manufactured by an exclusive process which permits greater accuracy in temper, width and thickness than has heretofore been possible in stapling wire. The galvanized finish will resist rust longer than the ordinary copper wash finish.

Silverstitch is wound in five and ten pound *continuous* length coils. The ten pound coil is widely used because it reduces time spent in changing coils and threading the machine 50%.

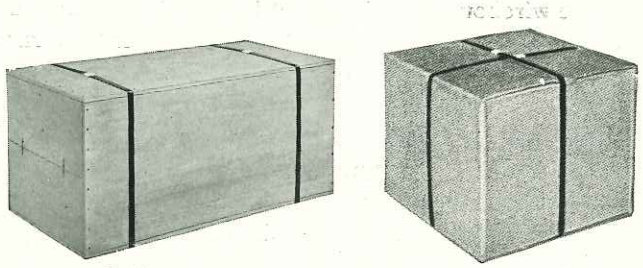
A free sample coil of Silverstitch will be gladly sent upon request to stapling wire users who would like to test it in their own plant.

NAILLESS STRAPPING EQUIPMENT:

Acme Nailless Band is fast, efficient, and economical for the reinforcement of all types of packages. The Acme Seal is the strongest that it is possible to secure through the use of a mechanical hand sealing device.

Sealed Sample, Acme Nailless Band

The Acme Method increases the efficiency of the container, insures security in transit and safe delivery. In many cases it makes possible marked reductions in the thickness of container material, thereby reducing freight cost as well as package costs.



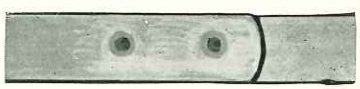
Nailless band applied to wood and fibre boxes

Manufacturers shipping in small packages can save money, in many instances, by strapping several packages together to secure a different express classification and a lower rate.

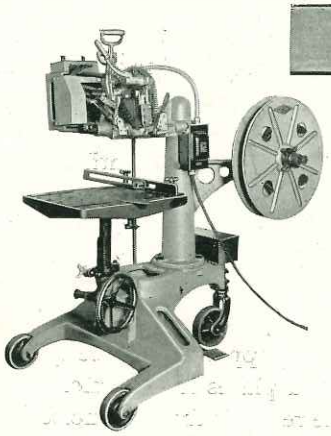
5 boxes bundled

Catalog No. 26 shows many ways to cut shipping cost. Sent free on request.

WELDFAST STRAPPING MACHINE:



Acme Weldfast Joint
(Electrically spot welded)



The Acme Weldfast Strapping Machine provides the fastest and most efficient means for the application of flat strap. Semi-automatic in action, it tensions the strap very rapidly and electrically spot welds the overlapping ends. This welded joint is fully 95% as strong as the strap.

One man can single strap 1600 to 2000 standard size packages a day.

If you ship 500 or more boxes a day the Acme Weldfast Strapping Machine will pay dividends in your shipping room.

Tell your 1930 message with Canco lithography

CLAIRVOYANT

DREAM SHIP

TUDOR

FOR beauty of design and colorful lithography—rich, clear and expert—Canco's metal packages are keyed to modern ideas and requirements. Whether you wish an individual package created for your brand or one of our stock designs, you are assured of a splendid choice. If you seek distinction in your package — if you would find one that embodies expert workmanship and real beauty—then distinctive metal packages by Canco merit your first choice.

AMERICAN CAN COMPANY

America's Most Famous Products *are packaged by Pneumatic Machines*

IF accomplishment, if experience, if leadership are the yardstick by which you measure ability, then the Pneumatic Scale Corporation is best qualified to supply your needs in packaging machinery.

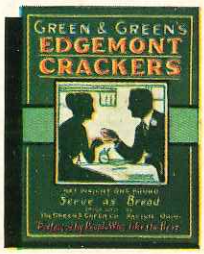
The story of packaging itself is the story of the Pneumatic Scale Corporation. The two grew and developed *together*. The first carton packaging machines were Pneumatic Scale Machines. The Pneumatic Scale Corporation was the leader then, and by strict specialization and concentration in this one field alone it has made its leadership even more absolute with the passing years. Today, practically all of America's most famous products — dry, liquid, and semi-liquid — are packaged by Pneumatic Machines.

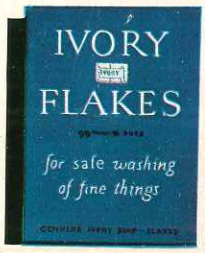
The Pneumatic Scale Corporation submits to you, as proof of its ability to serve you, this unequalled record of ability, experience, and leadership in the field of packaging machinery.

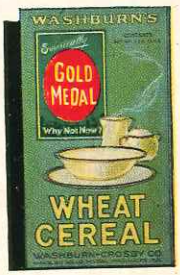
PNEUMATIC SCALE PACKAGING MACHINERY

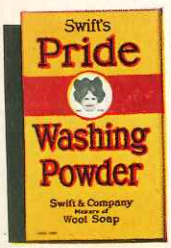
PNEUMATIC SCALE CORP. LTD. -:- NORFOLK DOWNS, MASSACHUSETTS

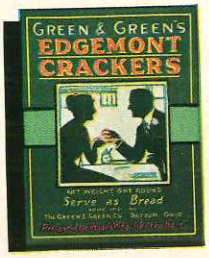
Branch Offices in New York, 26 Cortland Street; Chicago, 360 North Michigan Avenue; San Francisco, 320 Market Street; Melbourne, Victoria; Sydney, New South Wales; *and* London, England

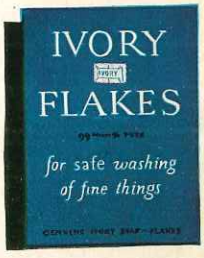












The Pneumatic Scale System *of Packaging Machinery*

INCLUDES over seventy different machines. A complete line of equipment for every packaging purpose. The Pneumatic Scale System of machinery is divided into two main divisions. One division comprises a complete line of machines designed to perform the entire carton packaging operations of dry, free-flowing materials. Semi-automatic or fully automatic machines delivering from fifteen to sixty completed packages per minute. This division includes the following machines:

CARTON FEEDERS
BOTTOM SEALERS
LINING MACHINES
WEIGHING MACHINES
(Net and Gross)
TOP SEALERS
WRAPPING MACHINES
(Tight and Wax)
CAPPING MACHINES
LABELING MACHINES

The other main division consists of machines for filling liquids and semi-liquids into bottles, jars, cans, and other containers by the vacuum process. Automatic Cap Feeding machinery. Capping Machines for automatically applying all standard size and shape screw caps to bottles and jars. Filling and Capping Machines can be furnished to operate at speeds from fifteen to one hundred and twenty filled containers per minute. This division includes:

VACUUM FILLING MACHINES
AUTOMATIC CAPPING MACHINES
AUTOMATIC CAP-FEEDING MACHINES
AUTOMATIC CORKING MACHINES

The entire system of Pneumatic Scale Machines consists of over seventy different machines, built on the unit basis which allows a manufacturer to start with one machine performing a particular function and add on correlated machines as his needs increase, until his whole packaging operation is automatic. The flexibility of this system makes it equally adaptable for any manufacturer — large or small.

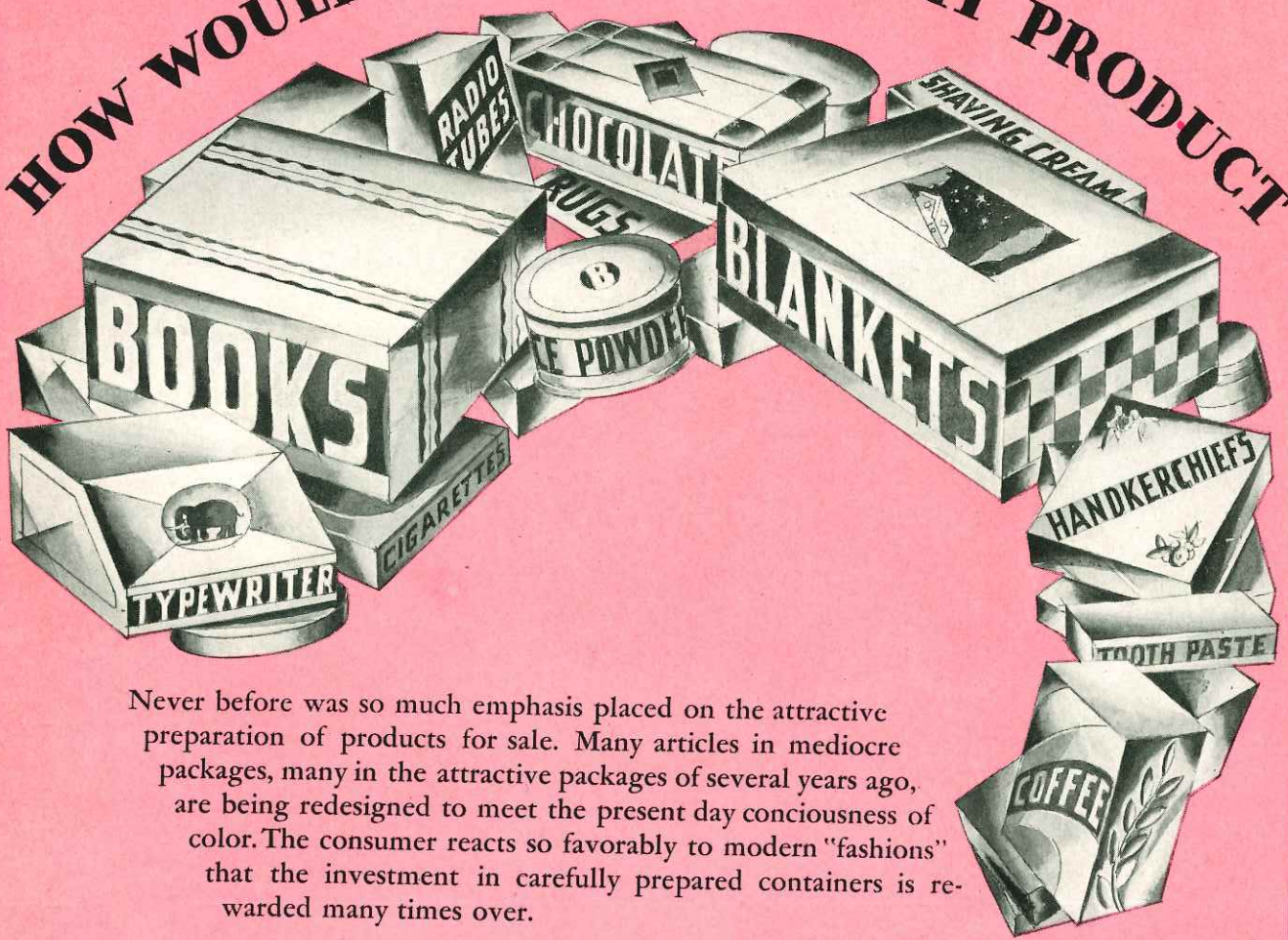
PNEUMATIC SCALE PACKAGING MACHINERY

PNEUMATIC SCALE CORP. LTD. -:- NORFOLK DOWNS, MASSACHUSETTS

Branch Offices in New York, 26 Cortland Street; Chicago, 360 North Michigan Avenue; San Francisco, 320 Market Street; Melbourne, Victoria; Sydney, New South Wales; *and* London, England

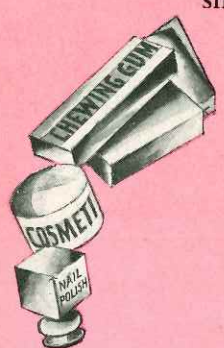
IN ANSWER TO THE QUESTION

HOW WOULD YOU PACKAGE MY PRODUCT



Never before was so much emphasis placed on the attractive preparation of products for sale. Many articles in mediocre packages, many in the attractive packages of several years ago, are being redesigned to meet the present day conciousness of color. The consumer reacts so favorably to modern "fashions" that the investment in carefully prepared containers is rewarded many times over.

Look to the package to promote increased consumption of your product this year. Any reliable box maker has records of articles which have become leaders by the adoption of the correct container. He can help to show how your product should be marketed.



And the box maker's first consideration—and yours—is the stock. It should have a coated surface for reproduction of halftones, process plates or lithography—Ridgelo Clay Coated Folding Boxboard. The Ridgelo box is a quality box, bright and clean in color, durable and tough in wear. Ask your box maker about this boxboard—used to package many of the nation's most successful products, in a quality way.

LOWE

RIDGELO CLAY COATED FOLDING BOXBOARD

MADE BY

Lowe Paper Company, Ridgefield, New Jersey

REPRESENTATIVE IN CANADA
W. P. Bennett
32 Front Street, W. Toronto

REPRESENTATIVE IN BUFFALO
Maurice W. Simon
52 W. Chippewa St., Buffalo, N. Y.

A.P.G. Glassine and "Cellophane" Bags for Modern Packaging

A.P.G. Glassine and "Cellophane" Bags have almost unlimited uses in the packaging of everything from hardware to valentines. ***Grease proof, dust proof, moisture proof***—they give better protection and insure sales appeal of articles packaged. And they ***are transparent!*** A.P.G. Bags —either printed or plain—in several styles —and many sizes.

Samples and quotations gladly furnished on request.

- Candy
- Nuts
- Bread
- Cakes
- Macaroni
- Pies
- Garters
- Hosiery
- Underwear
- Collars
- Shirts
- Cosmetics
- Drugs
- Perfumes
- Toilet Goods
- Soap
- Valentines
- Hardware
- Electrical Products
- Seeds
- Toys
- Jewelry
- Cigars
- Tooth Brushes
- Paper Specialties
- and many other products

THE AMERICAN PAPER GOODS COMPANY

KENSINGTON, CONN. . . . . CHICAGO, ILL.

SALES OFFICES

NEW YORK · BOSTON · SAN FRANCISCO

E. D. ANDERSON, INC.

Makers of Automatic and Semi-Automatic Cartoning, Wrapping, Assembling and Special Labor-Saving Machinery

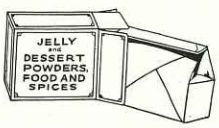
General Offices:
9–15 Park Place, New York, N. Y.

Factory:
45 Morris Street, Jersey City, N. J.

PRODUCTS:

Cartoning Machines (adjustable and single purpose); Wrapping Machines (waxed paper, foil, cellophane); Packing Machines (dessert powders, cereals, tea, coffee, etc.); Envelope Filling Machines (samples, powders, powder puffs, bandages, etc.).

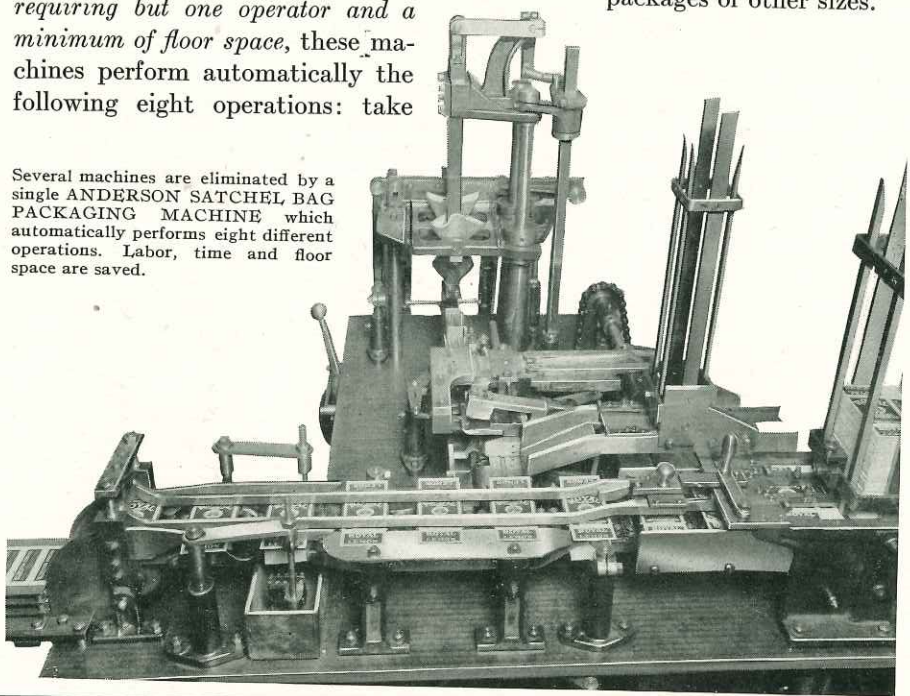
ANDERSON SATCHEL BAG PACKAGING MACHINE



The Anderson Satchel Bag Package—the "Perfect Package."

The attractive, sanitary, moisture-resisting and sift-proof satchel bag packages of such products as Jello, Tetley's Tea and Royal Gelatin Desserts are produced on the Anderson Satchel Bag Packaging Machine shown below. These machines have a capacity (depending upon the product) of from 35 to 70 complete packages per minute. As *single, compact units, requiring but one operator and a minimum of floor space*, these machines perform automatically the following eight operations: take paper from roll and form bag; fill bag with correct amount of product; close bag; take carton from magazine and erect it; take circular or booklet from magazine; insert bag and circular into carton; close carton by sealing both ends; emboss code letters on end flap.

Anderson Packing Machines are driven by a ¾ H. P. motor. The standard machines handle a carton 3⅜ in. x 2⅞ in. x 1⅜ in., but machines may be adapted to handle packages of other sizes.



Several machines are eliminated by a single ANDERSON SATCHEL BAG PACKAGING MACHINE which automatically performs eight different operations. Labor, time and floor space are saved.

E. D. ANDERSON, INC.

Makers of Automatic and Semi-Automatic Cartoning, Wrapping, Assembling and Special Labor-Saving Machinery

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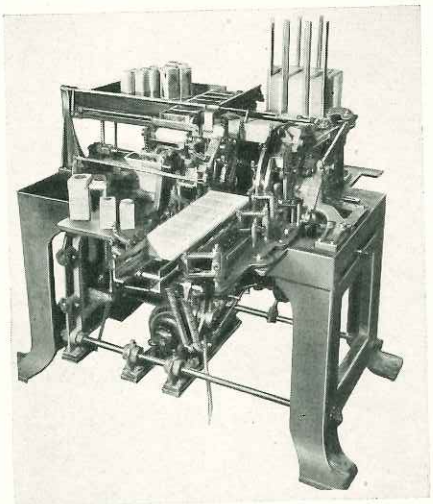


This ANDERSON ADJUSTABLE CARTONING MACHINE has a capacity of 100 cartons per minute. It may be adjusted to handle a wide variety of carton sizes.

CARTONING MACHINES —ADJUSTABLE:

This Anderson Machine has a capacity of 70 to 100 cartons per minute. It is widely used for cartoning jars, bottles, candies, yeast cakes, rubber heels, collapsible tubes, dry cell batteries, rolls of absorbent cotton, bandages and similar articles. It may be equipped, if desired, with circular insetting device. The machine requires only 4½ ft. x 6 ft. of floor space, and may be adjusted to handle all cartons within the following dimensional limits:

Length: Min. 2 in., max. 6 in.

Width: Min. ¾ in., max. 3 in.

Depth: Min. ¾ in., max. 3 in.

WRAPPING AND LABELING MACHINES:

The Anderson Wrapping and Labeling Machine illustrated below takes the required number of pieces from a hopper, wraps them—in foil, waxed paper, or both—and labels the package. Other Anderson machines of this type are used for wrapping such cylindrical objects as bottles, tubes and candies in plain and waxed papers, cloth, foil or cellophane. Life Saver Mints, Tootsie Rolls and General Electric Fuses are but a few products packaged on this machine.

This ANDERSON ALIGNING, WRAPPING and LABELING MACHINE is used for Life Saver Mints, General Electric Fuses, Tootsie Rolls and similar products.

THE ARABOL MANUFACTURING CO.

CHICAGO:
Office and Factory at
Cicero, Ill.

BOSTON:
12 Commercial Wharf

PHILADELPHIA:
620 So. Delaware Ave.

TORONTO:
13 King St., W.

Established 1885

Executive Offices
110 East 42nd Street
New York

Eastern Factory at Brooklyn, N. Y.
Western Factory at Cicero, Ill.

Telephone
NEW YORK OFFICES
Ashland 8490

Cable Address
"ARABOL," New York

FOREIGN AGENTS:
Representation in
GREAT BRITAIN, AUSTRALIA,
CUBA, MEXICO
and other countries

Largest and Oldest Adhesive Manufacturers in the World

GLUES, PASTES and GUMS

For all kinds of packaging operations

FOR GLASS LABELING

FOR TIN LABELING

FOR CARTON WRAPPING

FOR CARTON SEALING

FOR SEALING SHIPPING CASES

FOR PAPER BOX MAKERS

FOR PAPER BAG MAKERS

FOR SPECIAL OPERATIONS

For almost 50 years this organization has supplied packaging adhesives to the leading manufacturers and packers of the country.

Whether your packaging proposition requires labeling, wrapping, sealing or other adhesive operations we have the experience and the facilities for supplying the *right* glue to suit each specific need. *Reliability* and *Uniformity* have always distinguished ARABOL products.

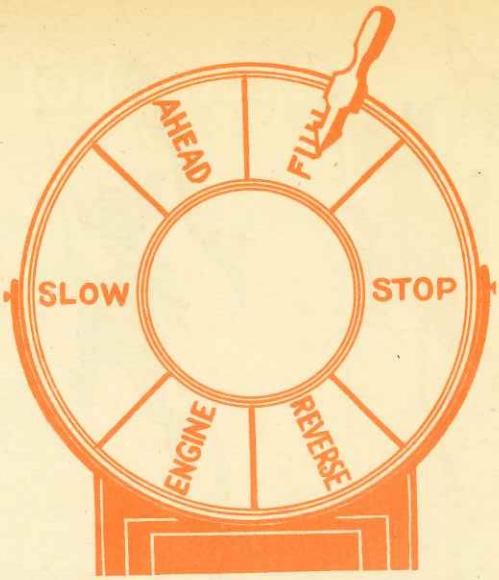
We have perfected a special adhesive for every make of machine on the market which applies glue or paste in the process of packaging. Most of these adhesives have been developed in co-operation with the machine manufacturers and are recommended by them for producing best results with their equipment.

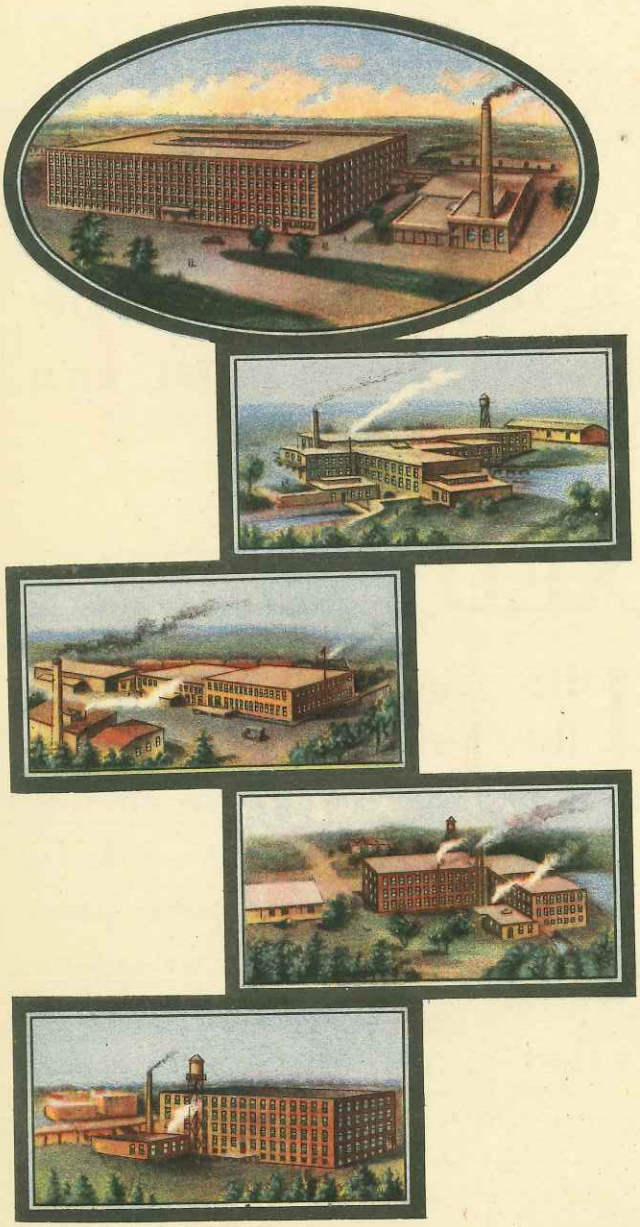
Each year we receive thousands of inquiries about glues, gums and pastes for packaging requirements. These inquiries come to us from practically every trade and every field of industry, and they cover a great variety of adhesive operations. We give careful study to each inquiry, and in most cases we can recommend an adhesive that will do exactly the work required. We are often asked to suggest a cheaper glue to take the place of a more expensive product.

All users of adhesives are invited to avail themselves of this service, without obligation. Whether adhesive requirements are simple or complicated we will be glad to offer suggestions based upon our adhesive experience of almost 50 years.

CONTROL

IF the pilot and the captain disagreed . . . . and the engineer had his own ideas . . . . but no need to go further . . . . they never do run wild . . . . co-ordinated control makes every part of the crew pull together.





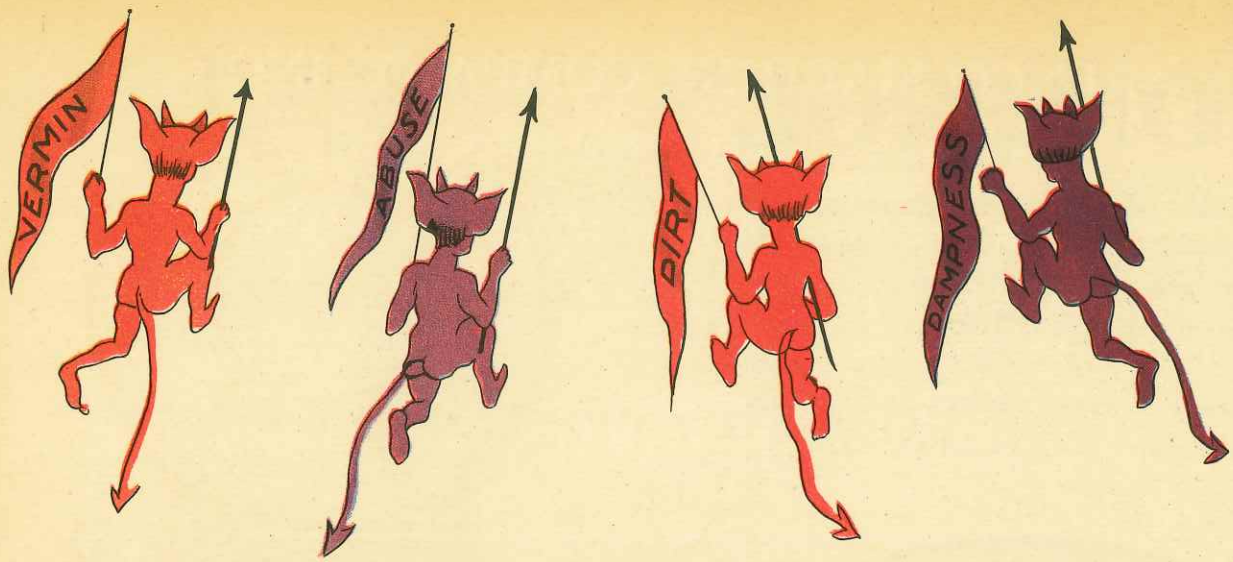
THIS very spirit of teamwork which dominates the entire organization of the American Tissue Mills enables its five plants to work together as one . . . . and that one a co-ordinated giant capable of supplying the largest order in the shortest time exactly up to specifications.

WAXED PAPERS
FANCY DECORATED PAPERS
CREPE PAPER NAPKINS
STREAMERS
FLORISTS CREPE PAPERS

GLASSINE BAGS
PLAIN OR DECORATED CREPE PAPERS
EMBOSSED PAPER NAPKINS
BORDERS
FOURDRINIER TISSUE PAPERS

AMERICAN TISSUE MILLS

HOLYOKE, MASS., U.S.A.



They're After Your Package!!

MULTIPLY these devils of destruction by millions and you have a fair picture of the gauntlet through which your package must run before it reaches the ultimate purchaser.

SANIGENIC WAXED PAPERS

SANIGENIC waxed-paper wrappers are being used by more and more of the foremost packagers of fine things today. New uses for Sanigenic wrappers are being found almost as fast as we can count them. Your product can be enhanced in value, in the eye of the buyer, by the use of waxed wrappers.

THE consuming public . . . the housewives . . . the spenders of the nations income . . . . have learned to look for quality in wax-wrapped packages. And waxed wrappers have become a symbol of quality that runs all the way through . . . . product, package and all.

WAXED PAPERS FOR EVERY PURPOSE

AMERICAN TISSUE MILLS

HOLYOKE, MASS., U.S.A.

ARENCO MACHINE COMPANY, INC.

25 WEST 43rd STREET, NEW YORK, N. Y.

Designers and Manufacturers of Tobacco Packing Stamping and Labeling Machines

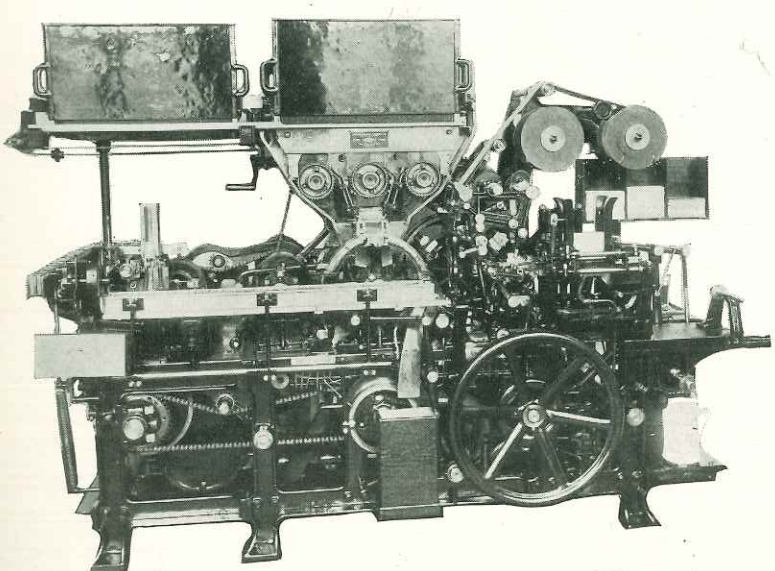
PRODUCTS:

Packing Machines for cigarettes, cigars and tobacco; Machines to affix labels, revenue stamps and stickers on packages of all shapes and sizes; Cardboard Box Making Machines and sundry Wrapping Machines.

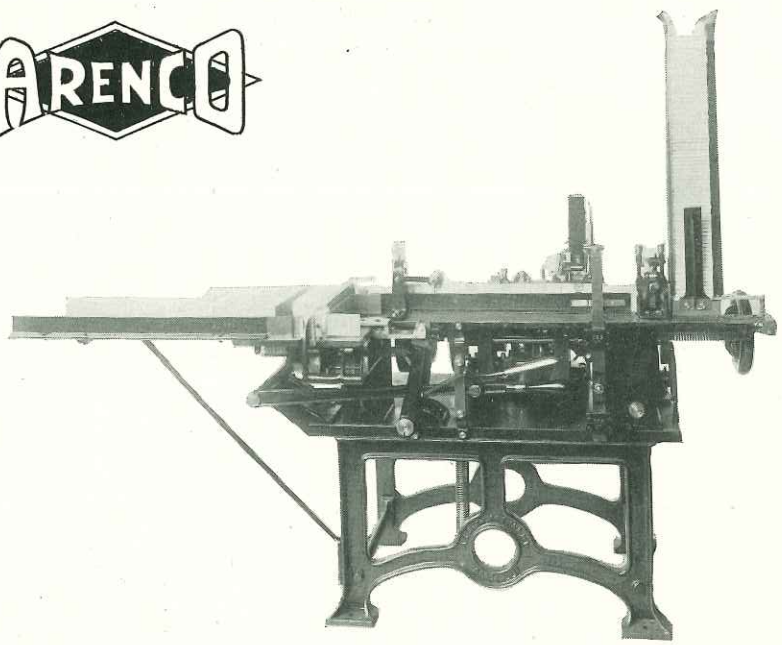
ARENCO PACKING MACHINES:

The Arenco Cigarette Packing Machine, type ECP, is used extensively in cigarette factories throughout the world. In the United States and Canada more than four hundred machines are in operation. The machine, attended by one operator only, has a production of 50,000 packages per day.

The most commonly used machine is the 20s Packer which automatically forms a tinfoil lined pouch, inserts the cigarettes in three rows and seals the package by affixing a revenue stamp over the top. Other machines are also built to pack cigarettes in single or double wrappers with open or closed top, from ten cigarettes in one row to twenty-five cigarettes in two or three rows.



The Arenco Cigarette Packing Machine, Type ECP



The Arenco Labeling Machine, Type TAF

The machine is powered by a 1 HP. motor, and is equipped with electric switches which stop the machine if packages or cigarettes should jam at any point. The main dimensions of the machine are: 6′ 4″ high, 8′ 8″ long, and 4′ 2″ wide—net weight is 5400 pounds.

ARENCO LABELING MACHINE:

The type TAF Machine is used to affix stickers and revenue stamps on various packages ranging in size from a match box to a cigar box. The TAF Machine has a speed ranging from 85 per minute to 110 per minute, varying with the size of the package to be stamped. The machine is equipped with a ½ HP. direct geared motor, and is attended by one operator. The main dimensions of this machine are: 5′ long and 2′ wide.

Machines of this type can be built for special purposes to apply several stickers or stamps to each package.

Other automatic machines are built to suit any specifications, and estimates for such machines will be furnished upon request.

THE AUTOMAT MOLDING & FOLDING CO.

16-18-20 Broadway Toledo, Ohio

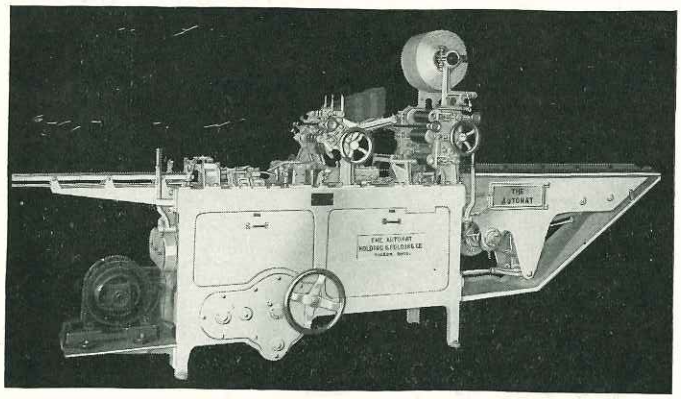
New York Office, 172 Chambers St. Los Angeles Office, 306 Calo Building

AUTOMAT

PRINTING WRAPPING & CARTONING EQUIPMENT

PRODUCTS

Wrapping and Cartoning Machines, Wrapping Machines, Tub Cutters and Printing Machines.

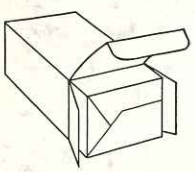


GENERAL INFORMATION ON WRAPPING AND CARTONING EQUIPMENT

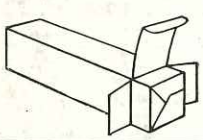
The principal advantages of Automat equipment are: reduced payroll, increased production, and saving in floor space. An outstanding feature of the Automat is the displacement of doubtful human hands with clean, sterile metal fingers, which makes it possible to wrap and carton butter without being touched with hands. The operation of Automat equipment does not require skilled help. Three operators will easily replace fifteen people using the hand wrap method. Standard cartons may be used, and printed parchment in rolls to fit the Automat are easily obtained. It folds a wrap which practically seals the print, and encloses butter in neat, square cut cartons without buckled ends.

Automat equipment is absolutely sanitary. All metal used in the Automat is of a special alloy to withstand the reaction of acid, salt water and constant washing and scalding.

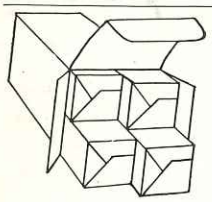
TYPES OF AUTOMATS



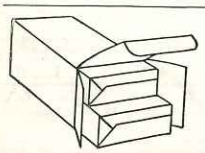
Type A. Wraps and cartons pound solids. Size of print 2½″ x 2½″ x 4¾″. Capacity 4800 pounds an hour. Speed 80 pounds a minute. Occupies floor space 2 feet 3 inches by 11 feet 6 inches.



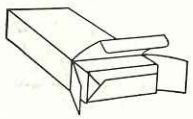
Type C. Wraps and cartons quarter pound prints. Size of print 1¼″ x 1¼″ x 4¾″. Capacity 1500 pounds an hour. Speed 100 quarters, or 25 pounds, a minute. Occupies floor space 2 feet 3 inches by 10 feet 6 inches.



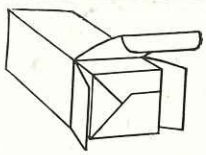
Type F. Wraps individual quarters in parchment and assembles four quarters in a pound carton. Size of print 1¼″ x 1¼″ x 4¾″. Capacity 1500 pounds an hour. Speed 100 quarters, or 25 pounds, a minute. Occupies floor space 2 feet 3 inches by 12 feet.



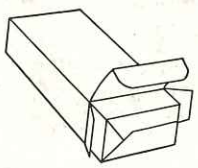
Type H. Wraps halves in parchment and assembles two halves in one pound cartons. Size of print 1¼″ x 2½″ x 4¾″. Capacity 2400 pounds an hour. Speed 80 prints, or 40 pounds, a minute. Occupies floor space of 2 feet 3 inches by 12 feet.



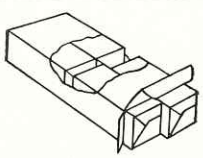
Type K. Wraps and cartons half pound prints. Size of print 1¼″ x 2½″ x 4¾″. Capacity 2400 pounds an hour. Speed 80 halves, or 40 pounds, a minute. Occupies floor space of 2 feet 3 inches by 11 feet 6 inches.



Type P. A. Wraps and cartons pound solids in a Pennsylvania style carton. Size of print 2⅛″ x 2⅞″ x 4⅞″. Capacity 4800 pounds an hour. Speed 80 pounds a minute. Occupies a floor space of 2 feet 2 inches by 11 feet 6 inches.

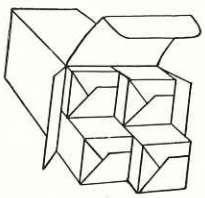


Type W. A. Wraps and cartons pound solids in a Western style carton. Size of print 1½″ x 3″ x 6½″. Capacity 4800 pounds an hour. Speed 80 pounds a minute. Occupies a floor space of 2 feet 3 inches by 11 feet 6 inches.



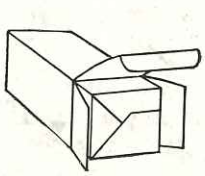
Type W. F. Wraps individual quarters in parchment and assembles four quarters in a Western style pound carton. Size of print 1½″ x 1½″ x 3¼″. Capacity 100 quarters, or 25 pounds, a minute. Occupies floor space 2 feet 3 inches by 11 feet 6 inches.

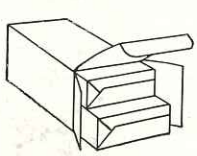
Dual Type. This model may be easily adjusted to wrap and carton four quarters or twin halves. Size of prints 1¼″ x 1¼″ x 4¾″ to 1¼″ x 2½″ x 4¾″. Capacity 1500 pounds an hour. Speed 100 quarters, or 25 pounds, a minute, or 50 halves, or 25 pounds, a minute. Occupies floor space of 2 feet 3 inches by 12 feet.

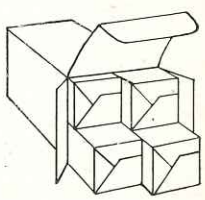


Sketches above show types of work which may be done on the Dual Type Automat by merely making a few easy adjustments.

Triplex Type. This machine is the newest member of the Automat family of wrapping and cartoning machines. As the name implies, this model is designed to wrap prints of three distinct sizes, and automatically enclose them in pound cartons. With a few minor changes this machine may be adjusted to wrap and carton pound solids, twin halves or four quarters. The standard model is designed to handle the following print sizes: 2½″ x 2½″ x 4¾″; 1¼″ x 1¼″ x 4¾″ and 1¼″ x 2½″ x 4¾″.





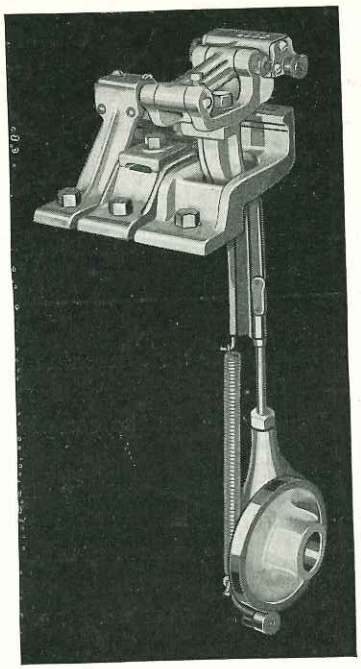


Sketches above show types of work which may be done on the Triplex Type Automat by merely making a few easy adjustments. This machine really gives the advantages of three distinct Automats for but little more than the cost of a single machine. (Send for Bulletin No. 4.)

THE AUTOMAT MOLDING & FOLDING CO.

AUTOMAT ATTACHMENTS

To meet the demands of the trade the following attachments have been designed to fit all models in the Automat line.

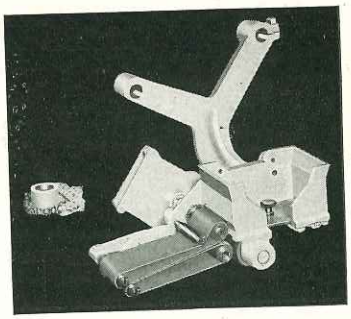


DATING DEVICE

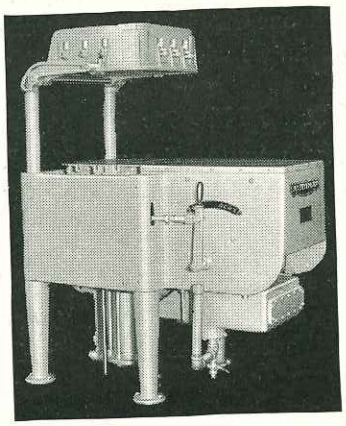
The utility of the dating attachment appeals to many dairies, as it offers an automatic means of embossing a date on the flap of the carton as it passes through the machine. This mark on the package serves as an identification of the age of goods if they are returned to the dairy, and has other advantages in keeping shipping records.

SLIP FEEDING

Many desire to enclose advertising slips, coupons, etc., with the prints they wrap. A slip feeding attachment has been designed to meet this demand and it may be used in connection with any type of Automat.



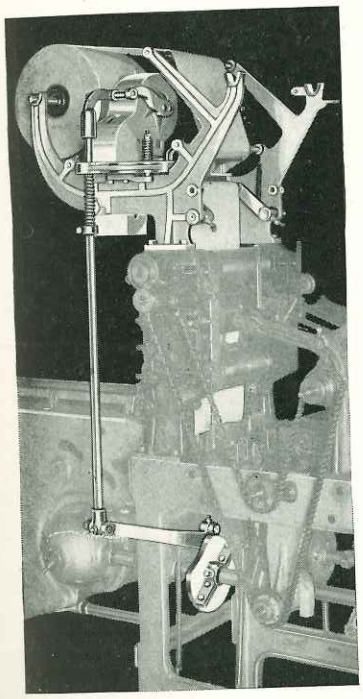
AUTOMAT HYDRAULIC PRE-CUTTER



Designed to cut tub butter of low temperature and is hydraulic in operation.

When the butter has been cut into slabs it is automatically dumped in the hopper of the print-making machine.

The Pre-Cutter is powered with a water-proof one horse-power motor. It is easily cleaned and the metal is impervious to moisture and the action of salt water.



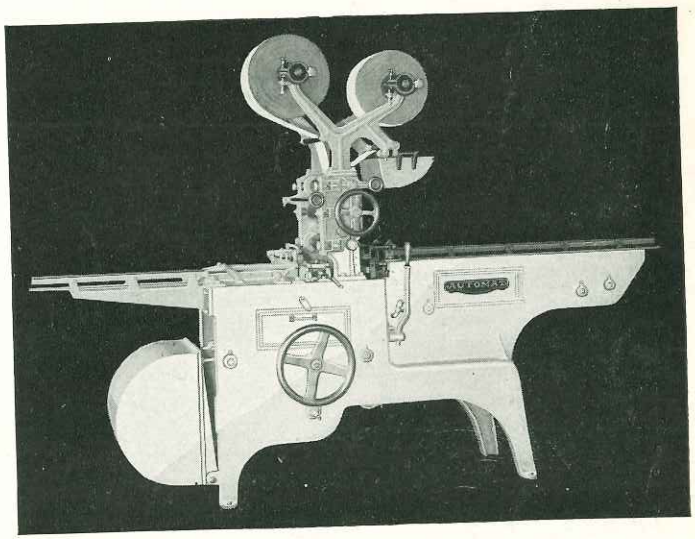
PARCHMENT PERFORATOR

In response to a persistent demand from the trade, we have perfected a parchment perforating attachment that may be used in conjunction with any Automat wrapping and cartoning machine, as well as the wrapping machine.

The utility of this attachment lies in the fact that every print wrapped carries with it a date or any other desired marking permanently perforated through the parchment paper. Such markings are of inestimable value in the case of returns or rejections. The figures or other markings are easily changeable.

AUTOMAT WRAPPER

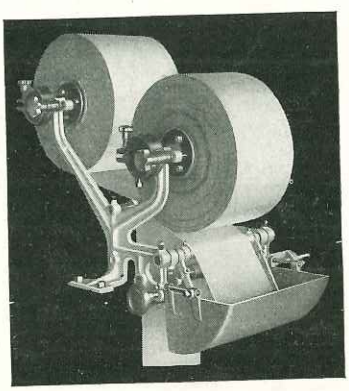
The Automat Parchment Wrapper has been designed and built in response to a persistent demand from the trade for a wrapper without the cartoning unit.



This wrapper may be equipped to use either the single or double wrap, and may be furnished to wrap pound solids only, or an adjustable model that will wrap quarter pounds or half pounds. The Wrapper is powered with a water-proof one-half horse power motor.

DOUBLE WRAP ATTACHMENT

Commercial and scientific practice has demonstrated that butter may be kept in better condition over a longer period of time when the double, or wet wrap, is used. This wrap consists of a parchment wrap passed through a brine or other solution, with a waxed wrapper on the outside. The benefits of the double wrap are three-fold, namely, retention of flavor; better keeping quality; less loss in weight.



AUTOMAT SERVICE

The lack of service never need stand between a dairy and the installation of Automat equipment. Machines of the finest quality and efficiency are our first consideration, and next comes service of the highest type to keep these machines in constant operation.

There is hardly a dairy in the United States that is not within twelve hours' ride of an Automat service man.

Automatic Packaging Machinery Company

MANUFACTURERS OF "AUTO-PACK" UNIT MACHINES

EXECUTIVE OFFICES AND MACHINE SHOPS

NASHUA, N. H.

Selling Agents: Gibbs-Brower Company, Inc., 261 Broadway, New York City

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The "AUTO-PACK" makes automatically a complete package in a single unit machine with one operator. It is made in several types, each one of which will automatically take the package blank from the magazine, open it, close the bottom, fill with merchandise, close the top and deliver the complete package.

AUTO-PACK UNIT CLASS NO. 90:

Operating speed 60 per minute. Length 7′ 6″. Width 3′ 6″. Height 6′. Weight 1750 lbs. Motor ¾ H.P.

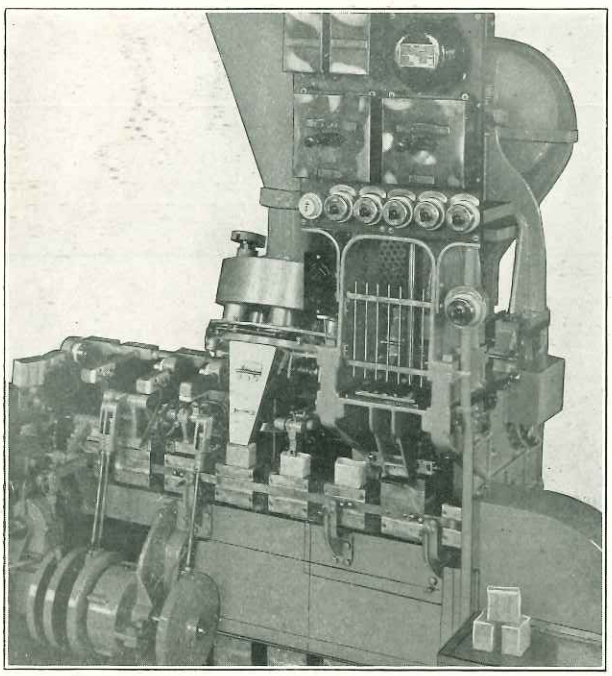
Largest package 2″ x 4″ x 7″.

No. 91 glues carton top and bottom and fills with measured merchandise.

No. 92 glues carton top and bottom and fills with unit articles of all kinds.

No. 93 tucks carton top and bottom and fills with measured merchandise.

No. 94 tucks carton top and bottom and fills with unit articles of all kinds.



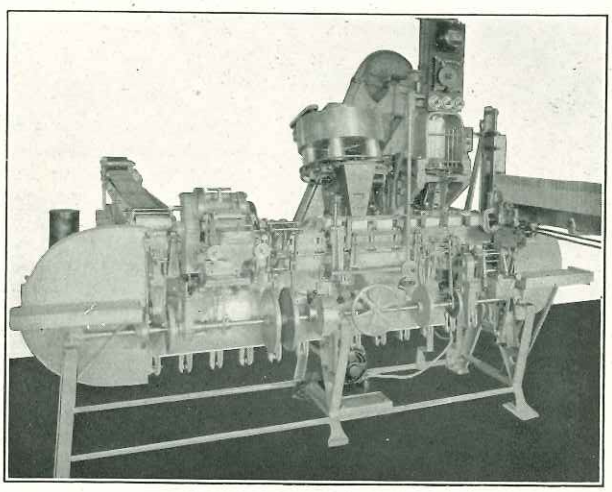
AUTO-PACK UNIT CLASS NO. 140:

Operating speed 50 per minute. Length 10′ 3″. Width 3′ 6″. Height 9′. Weight 3500 lbs. Motor 1½ H.P.

Largest package 2″ x 4″ x 7″.

No. 141 glues carton top and bottom, lines with self-sealing paper, fills with measured merchandise and folds liner independent of tabs.

No. 143 tucks carton top and bottom, lines with self-sealing paper, fills with measured merchandise and folds liner.



AUTO-PACK UNIT CLASS NO. 160:

Operating speed 50 per minute. Length 11′ 3″. Width 3′ 6″. Height 9′. Weight 3700 lbs. Motor 2 H.P.

Largest package 2″ x 4″ x 7″.

No. 161 glues carton top and bottom, lines with self-sealing paper, fills with measured merchandise, double folds and heat seals liner independent of tabs.

AUTO-PACK PACKET CLASS NO. 80:

This machine takes a roll of paper, cuts off required length, forms it into a bag, fills, double folds and heat seals top, forming a complete packet.

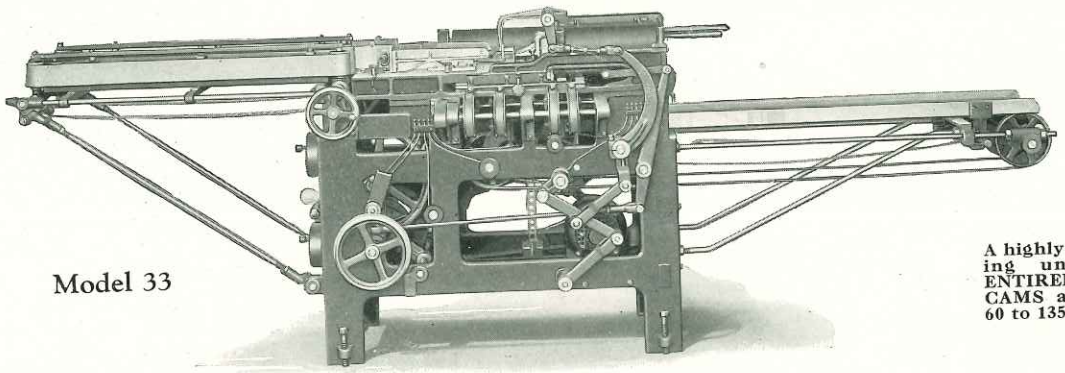
Operating speed 50 per minute. Length 7′ 6″. Width 3′ 6″. Height 8′ 6″. Weight 3000 lbs. Motor 1 H.P.

Our standard types can be varied and adapted to handle special packaging problems. Conveyors on glue type are 6 or 9′ long.

BATTLE CREEK WRAPPING MACHINE COMPANY

BATTLE CREEK, MICHIGAN

London Office: C. S. duMont, Windsor House, Victoria St., Westminster S. W. 1



Model 33

A highly efficient wrapping unit—operating ENTIRELY WITHOUT CAMS at speeds from 60 to 135 per minute.

A group of related package sizes handled in combination on one machine has heretofore represented a situation not practical or easily handled in daily practice. Much depended on the human element, and if an operator were not thoroughly familiar with all the changes necessary to alter a machine from one package size to another, the machine could not wrap efficiently.

Convertibility on the Model 33 has been developed on a new principle. Instead of changing the location of parts, folders, etc., from one package to another, the entire equipment is removed from the machine and in its place is positioned additional equipment built for the next size to be wrapped. There is no fitting or adjusting to be done. The equipment is factory-built for the package to be wrapped and will always wrap that size package when placed on the machine and locked.

The advantage of convertibility can be seen and used whenever individual package sizes are not produced in sufficient volume to warrant automatic machine wrapping, but which, combined with the volume of other related sizes, make such an investment well worth while.

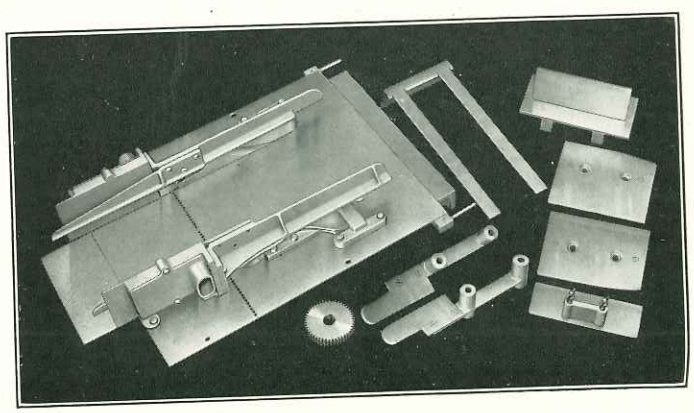
In many factories the daily total of packages hand wrapped warrants the installation of an automatic machine, but this total may be the combination of 2 or 3, sometimes more sizes. Separately they do not warrant individual wrapping machines for each size, but in combination a large saving in hand wrapping may be made with a convertible machine capable of handling several sizes.

Model 33 is equally as well adapted to the handling of individual size packages, in which case the features of convertibility are not built into and incorporated in the machine.

PACKAGE COMBINATIONS

View of package combination now being handled on one machine

CONVERTIBILITY



View of equipment change needed to convert machine from one package size to another

Change in equipment from one size to another can accurately be made in 5 to 10 minutes' time.

Automatic machinery also manufactured for the wrapping of—butter (¼—½—1 pound prints in combination), yeast, scrap tobacco, chewing gum, biscuit cartons, caddies (in kraft paper), confectionery packages, etc. Hand operated machinery for odd sizes, small production work, etc.

H. R. BLISS COMPANY, Inc.

Manufacturers of Adhesive Sealing and Wire Stitching Machinery for Fibre Containers of Every Description

NIAGARA FALLS, N. Y.

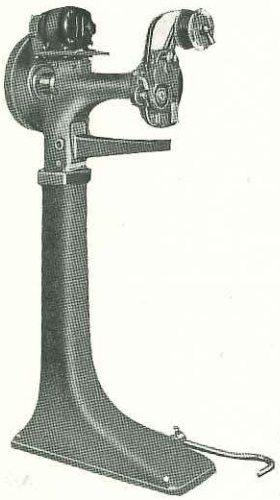
50 Church St., New York
% Harry W. Brintnall Co., San Francisco, Cal.

Transportation Bldg., Chicago
% James Q. Leavitt Co., Ogden, Utah

PRODUCTS:

Box Stitchers and Automatic Stitching Equipment for assembly of all types of paper boxes; Bottom, Top and Combination Stitchers for assembly and sealing of solid fibre and corrugated shipping containers; Plain and Automatic Equipment for stitching manufacturers' seam on regular slotted containers; Corner Stay Stitchers; Cracker Caddy Sealing Stitchers; Portable Stitchers; Adhesive Sealing Machines, automatic and semi-automatic; Special Equipment for assembly and sealing of Bliss Boxes; Flange Benders; Staple Removers; also Licensors of Bliss (Patented) Fibre Shipping Containers.

BLISS STITCHERS:



Bliss Box Stitcher

The salient features are rugged construction and durability of materials which insure low maintenance cost; multiple disc clutch, automobile type, which permits starting and stopping without vibration. The Bliss Stitcher Head has all moving parts of steel and operates at stitching speeds up to 500 stitches per minute, when desired. The head is quickly detachable by removing three bolts, thus facilitating quick servicing. The Stitcher Head will drive any kind of wire including bookbinders', flat stapling, round, or HyBar.

BOX STITCHERS:

These are made in various types adapted for the assembly of paper cartons, suit boxes, candy and all other set-up boxes; also for bag closing, stitching of candy and paper novelties, and for the assembly of Bliss Boxes. Made in 15″, 25″ and 33″ sizes.

BOTTOM STITCHERS:

Bliss Bottom Stitchers are made in 15″ and 25″ sizes with height to suit the needs of the user. The post anvil is quickly adjustable up or down without wrenches and the post itself is readily centered without moving the stitcher head. This machine will handle any length and width of case and has an extra large clearance between the anvil and the head of the machine which facilitates the introduction of the case to be stitched.

TOP STITCHERS:

Bliss Top Stitchers are equipped with heat treated, forged steel Blade Anvils of 15″, 25″ and 33″ lengths; also with the new Bliss quick lift ball bearing work table. Adjustment of blade anvil and also of the height of the work table are quickly made without use of tools.

COMBINATION STITCHERS:

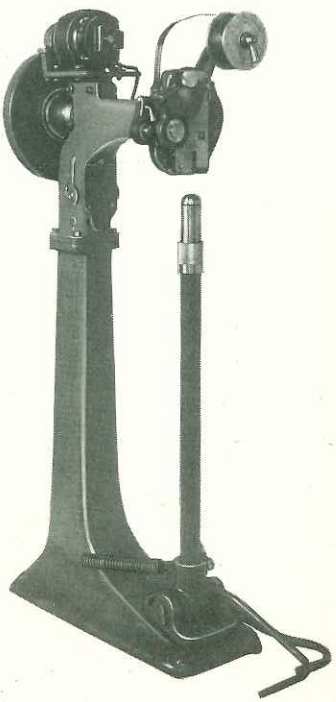
These are equipped for both top and bottom stitching and make possible an economy in investment if production requirements will permit double use of the machine. The blade anvil folds down against the machine when not in use. The quick lift table is readily swung out of the way when not needed and the post for the Bottom Stitcher can be instantly removed or replaced.

CORNER STAY STITCHERS:

These machines are especially designed for stitching the corners of the covers of cracker caddies and will positively eliminate any spread between the flanges of the completed cover.

RSC STITCHERS:

These machines are available both in hand operated and automatic types for stitching the manufacturers' seam of regular slotted containers.



Bliss Bottom Stitcher

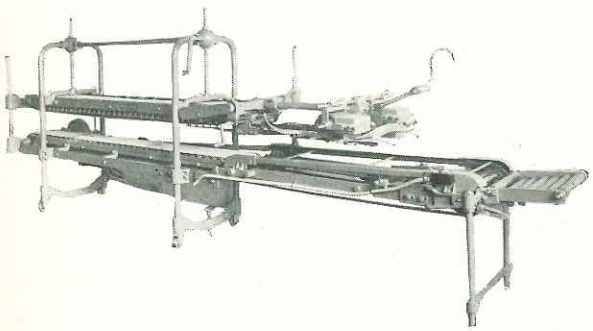
H. R. BLISS COMPANY, Inc.

BLISS ADHESIVE SEALERS:

Bliss Compression Units are made in any desired length, the top and the bottom belts being driven simultaneously to insure proper sealing without distortion of the case. The machine is quickly adjustable for height or width of case; also bottom roller bed may be raised or lowered when necessary to fit plant conditions. The drive consists of bronze and steel gears protected by a housing and directly connected to the motor which operates continuously, the belts being started and stopped by means of a clutch and a trip actuated by each entering case.

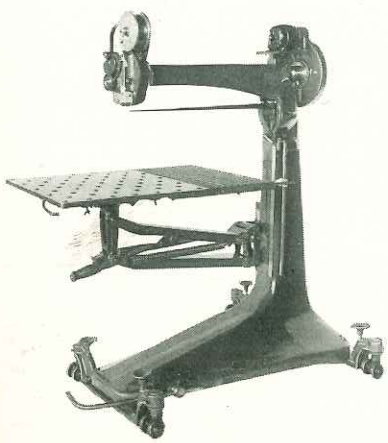
BLISS AUTOMATIC TOP GLUERS:

Can be had built into Bliss Compression Units or supplied in separated form. Their construction is more compact than that of other gluers due to a patented



Bliss Portable Top Automatic Gluer and Sealer

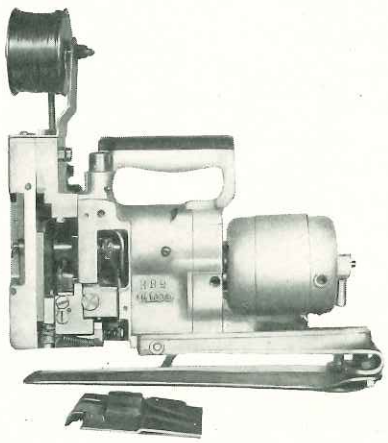
design, thus minimizing floor space. Capacity is large and adjustment to sizes quickly made. Safety stops are standard equipment on both Gluers and Sealers.



Bliss Top Stitcher, mounted on casters

BLISS PORTABLE STITCHERS:

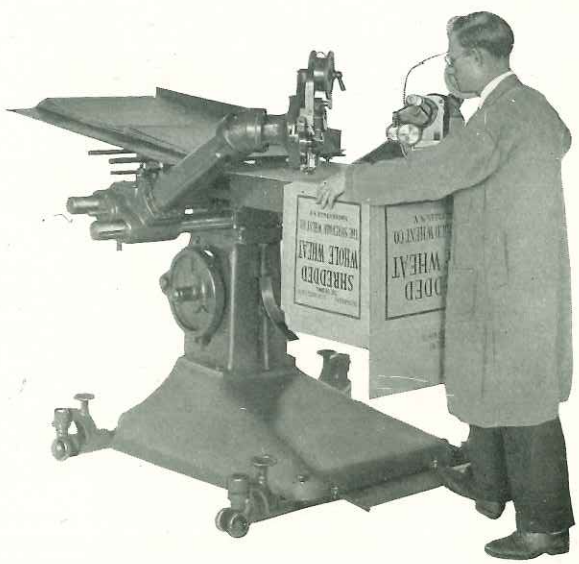
The new Bliss Portable Stitcher is self-contained, is very light in weight, and is recommended for special stitching work particularly where cases are of awkward or variable sizes and it is more convenient to bring the Stitcher to the case, without moving the latter. The machine is constructed entirely of steel and special light alloys, and has a universal motor, making it possible to connect to any convenient lighting socket.



Bliss Portable Stitcher

SPECIAL BLISS MACHINERY:

Automatic and semi-automatic Bliss Machinery is available for the assembly and sealing of Bliss Boxes, set-up boxes and other work. Consult a Bliss Engineer if you have a special stitching problem.

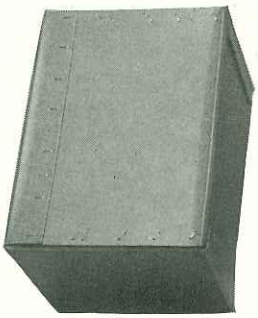


Bliss Double-Head Assembly Stitcher

H. R. BLISS COMPANY, Inc.

BLISS BOXES:

The STRONGEST and most ECONOMICAL fibre container on the market today is the BLISS BOX (Patented), which is of three-piece construction comprising a body sheet, forming the bottom, two sides and top, and two end panels, flaps being provided for assembly and closure. Illustration at bottom of page shows a typical BLISS BOX in partial and complete assembly.



Bliss Box, Side Overlap

Bliss Box, Center Overlap

BLISS BOXES are *stronger* because all four vertical seams are reinforced and because the grain of the board can be run to give maximum resistance to stress on sides and ends. The strength of the BLISS BOX is concentrated at the edges and corners to withstand rough handling in stacking and in transit. Both drum tests and actual service have demonstrated their value for the safe packaging of merchandise.

BLISS BOXES are *economical* because they contain no waste stock. The saving in area of board for a given cubical content amounts to from 8% to 25% of that required for the old type regular slotted carton. In addition, the extra strength of the BLISS BOX often permits the use of lighter board throughout or a combination of lighter body sheet with regular weight end panels. In such cases the saving in weight may be as high as 40%.

Bliss Box in Partial and Complete Assembly

Freight charges are reduced by the use of BLISS BOXES due to the lesser weight, the saving often amounting to from $1/4$ to $1/2¢$ per case.

Many different types of BLISS BOXES are available to suit individual requirements, size, nature and weight of contents, and number used per day.

Where the rate of use is low, or where a large variety of sizes are employed, BLISS BOXES are assembled on BLISS Box Stitchers readily and economically. For larger production the Bliss Double-Head Assembly Stitcher shown in the illustration on the previous page will increase speed and decrease labor cost.

The tops of BLISS BOXES are constructed with an overlap either at the side or in the center and may be sealed by wire stitching or gluing the top flaps or by a combination of these methods. Bliss Machinery is available in manual and automatic types for these operations.

BLISS BOXES are in daily use in large quantities by many nationally-known concerns for the shipment of package foods, shoes, soap, soap powder, canned goods, fresh and packaged meats, pail lard, bulk macaroni, matches, paper products, etc. The use of BLISS BOXES has increased 60% in the last year.

BLISS BOXES are manufactured by all of the leading box mills in the United States and Canada, under license.

BURT CREATIONS are recognizable instantly — their feminine appeal second only to their great merchandising possibilities.

Wraps designed by Burt.

84A

F. N. BURT COMPANY, Ltd.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

BURT DESIGNS and CREATIONS

FOUR BOXES --- each one individual in its own field yet all possessing the basic need of modern merchandising --- --- ORIGINALITY.

F. N. BURT COMPANY, Ltd.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

BURT DESIGNS and CREATIONS

THE essence of beauty is created by a pleasing exterior—on a firm foundation. Burt Quality Packages are structurally correct without sacrificing the merchandising possibilities that beauty brings.

F. N. BURT COMPANY, L·d.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

84¢

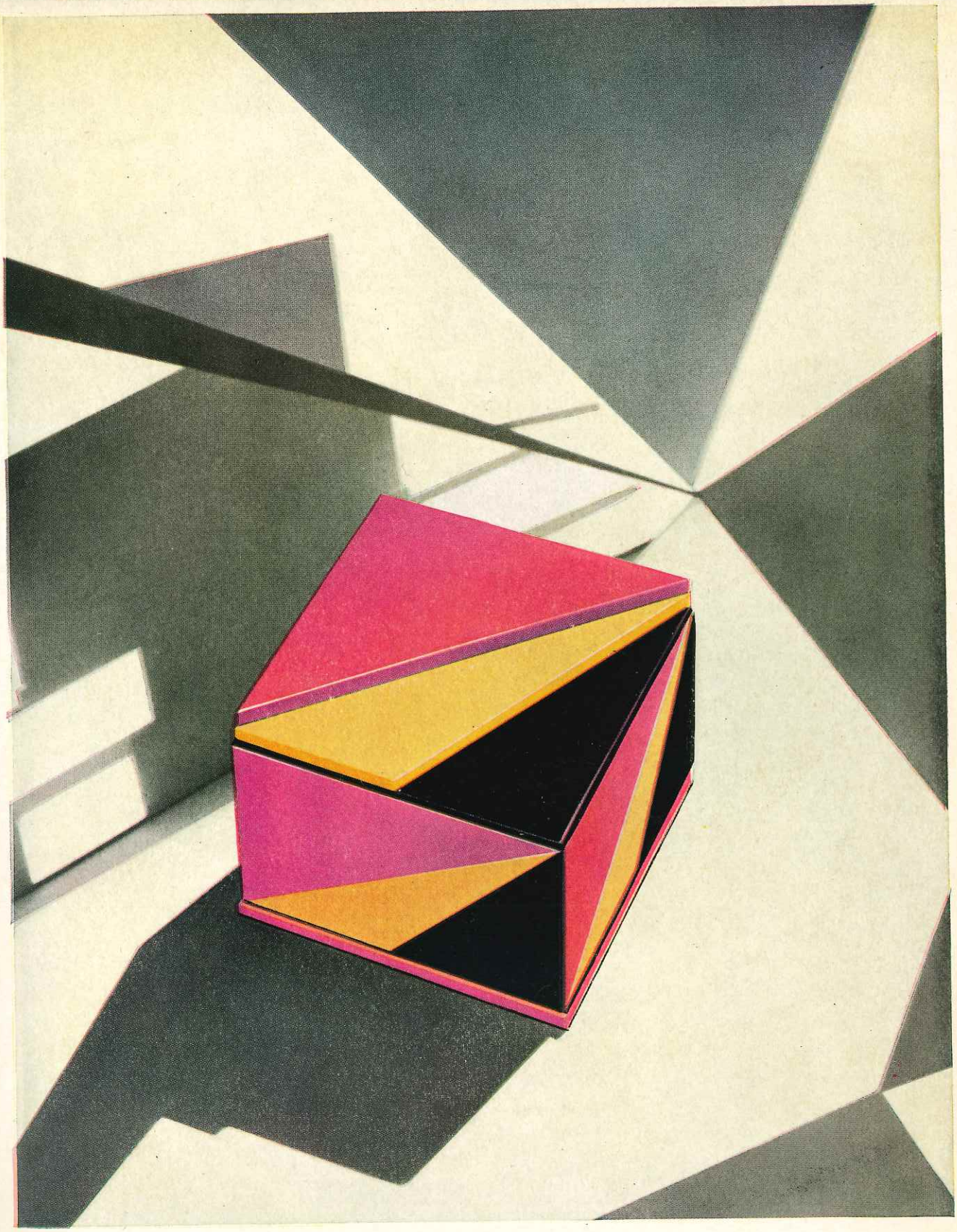
BURT DESIGNS and CREATIONS

MODERN production methods rule at Burt—but that hinders not in creating packages that will present and preserve your products in the spirit of conquering sales possibilities.

F. N. BURT COMPANY, Ltd.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

BURT DESIGNS and CREATIONS



BURT *"SPOTLIGHT"* Boxes permit unusual window dressing where the package is the salesman.

Once again proving the value of Burt personalized packages.

F. N. BURT COMPANY, Ltd.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

BURT DESIGNS and CREATIONS

A NEW PACKAGE may mean more to your sales than a new product.

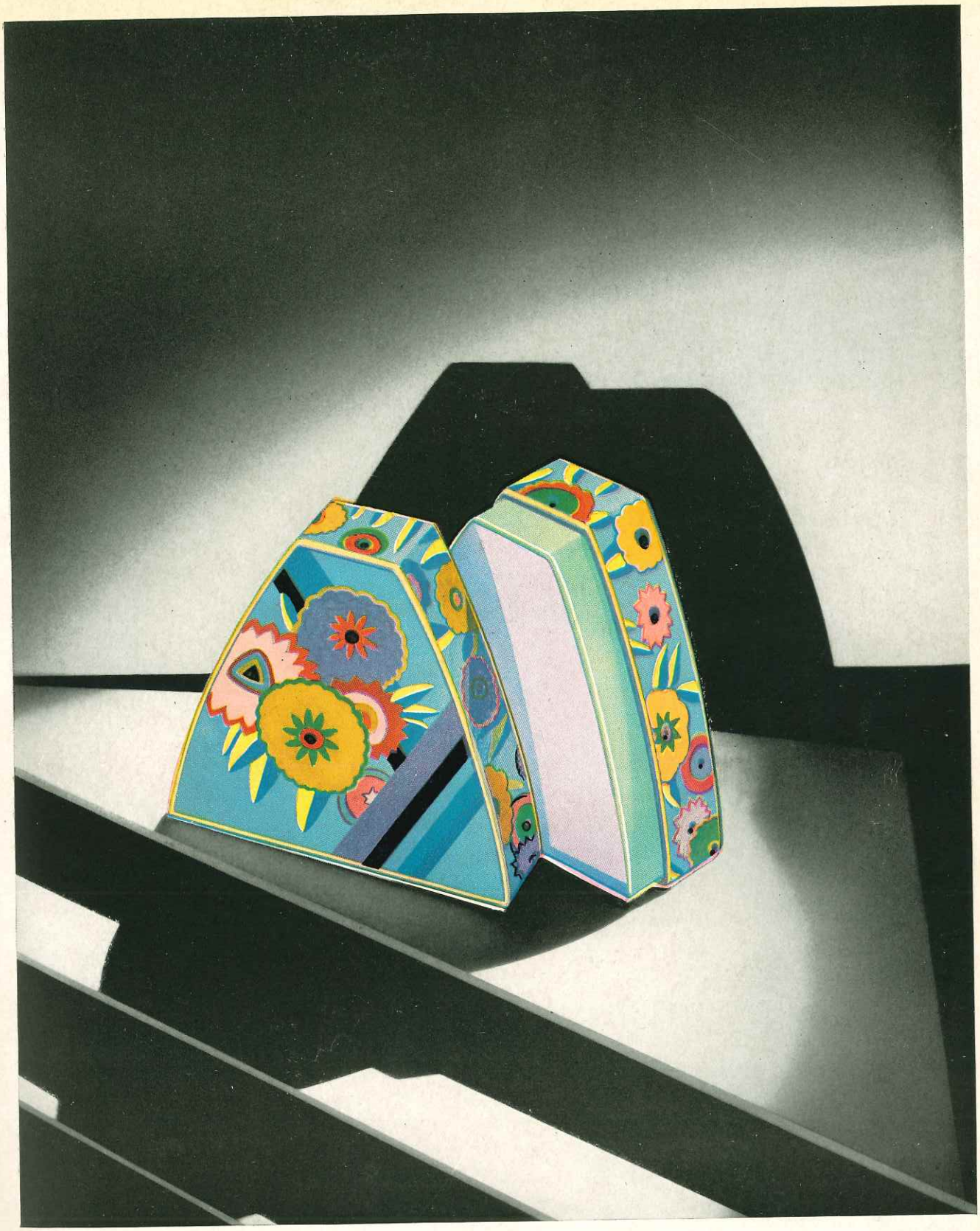
Burt Quality Boxes are designed to fit your packaging and merchandising needs.

841

F. N. BURT COMPANY, Ltd.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

BURT DESIGNS and CREATIONS



BURT, ever abreast of the times, takes pleasure in presenting old familiar shapes in their newest dress.
Modern, but not extreme, these Burt Quality Boxes will enable you to vision what this organization can do for your products.

F. N. BURT COMPANY, Ltd.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

BURT DESIGNS and CREATIONS

PILLS, paint or powder, if the need is for a small, fine box whose distinction is apparent, the merchandising possibilities prominent, Burt is the organization that is capable and efficient—due to 35 years of service—to give you the utmost in package dominance.

F. N. BURT COMPANY, Ltd.
Buffalo, N. Y.

Manufacturers of Fine Set Up Boxes

BURT DESIGNS and CREATIONS

Prepared and printed by
Service Department,
"Modern Packaging"

BURT MACHINE COMPANY

BALTIMORE, MARYLAND

Chicago, Ill. New York City Ogden, Utah San Francisco Los Angeles

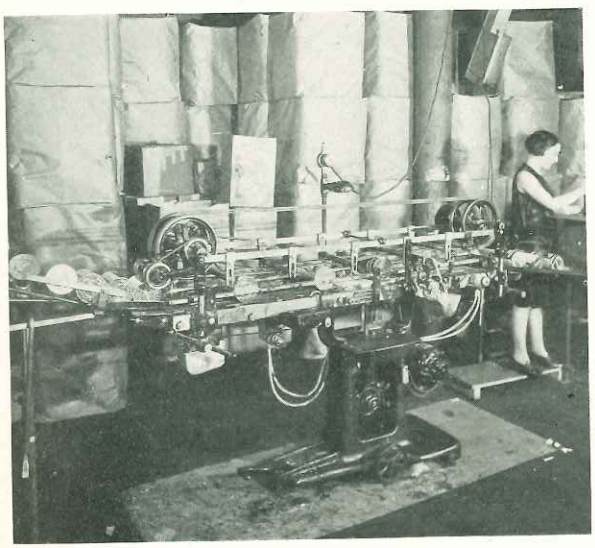
Manufacturers and Designers of Automatic Labeling and Casing Machinery

PRODUCTS:

Automatic Casing, Labeling and Inspecting Machines.

LABELING MACHINES:

There are seven models of the Labeling Machines. There is one for spot labeling No. 10 cans and also applying full-length labels; one for No. 10 cans and full-length labels only; one for cans with ears and full-length labels; one for slip-over cans; one for applying labels to flat surfaces; a Junior Labeler for small output, and a Labeler known as Model A and adjustable Model A, both for applying labels which overlap to round containers, whether they be of tin, fibre or glass.



Model A Burt Labeling Machine

These A models can turn out 208 cans a minute. Model A is for one size of can, which can also be had for cans with two or more different heights, providing the diameter is the same. The adjustable Model A is an adjustable diameter type (2 or more diameters) with the heights built to order. Both these machines rest solidly when ready for use, but can instantly be made portable by simply raising the base lever, which throws the center wheels in contact with the floor. All adjustments, such as adding glue and paste, regulating paste supply to lap belt, increasing contact of labels with the cans at the pick up, changing positions of the label on the can, may be made while the machine is running. Only for replenishing labels need the machine be stopped. The label feed is positive because the upward travel of the label is automatic, whether there be 100 or 1000 labels on the table. One knob permits the raising or lowering of this table. The pick-up pot has a reservoir on the outside of the labeler, which facilitates the refilling of glue and also makes the supply visible at all times. A drain cock makes it unnecessary to remove the pot for cleaning. Although these models are generally equipped for a hot pick-up, a special pot can be furnished for cold gum. The curling bar has four corners and is reversible. These square corners provide the necessary sharpness which gives the laps of the labels the decided curl. A one-quarter horsepower motor is used, this being connected to the machine via a shaft drive.

All Burt Machines are entirely constructed of metal. The Model A machines, suitable for $4^1/_4$″ diameter cans with run-downs raised, are about 10′ 7″ long, with the standard length front and back run-downs, which are 2′ 8″ each. Machines for smaller diameter cans are from 1′ to 2′ shorter. All standard machines are 1′ 6″ wide and about 4′ 5″ high.

CASING MACHINE:

The Burt Electro Caser permits, with a slight touch of the foot on the treadle, a layer of cans to be pushed into a wooden, solid fibre or corrugated case. This machine also spreads the flaps of the cases when the cases are put into position for receiving the cans. It is built on adjustable legs, suitable for a height of from 19 to 30″ at the take-off, the maximum height allowing fibre cases coming off at the proper elevation for entering into automatic sealer. The lifting gate type of separator is used, this being a perfect can separating medium, since it contains no blades, springs or other delicate parts. The entire machine is 6′ 10″ long and 2′ 2″ wide, weighing 550 pounds.

Burt Casing Machine

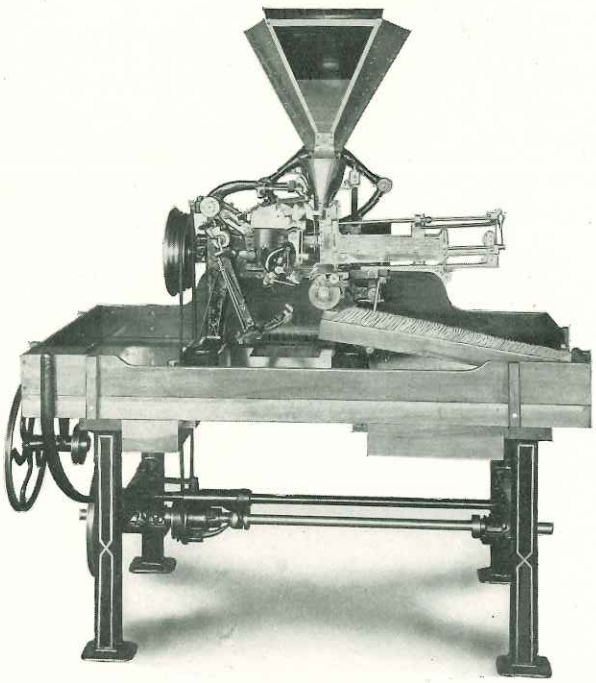
INSPECTOR MACHINE:

This is attached to the discharge end of the labeling machine and automatically throws out any can which has missed a label.

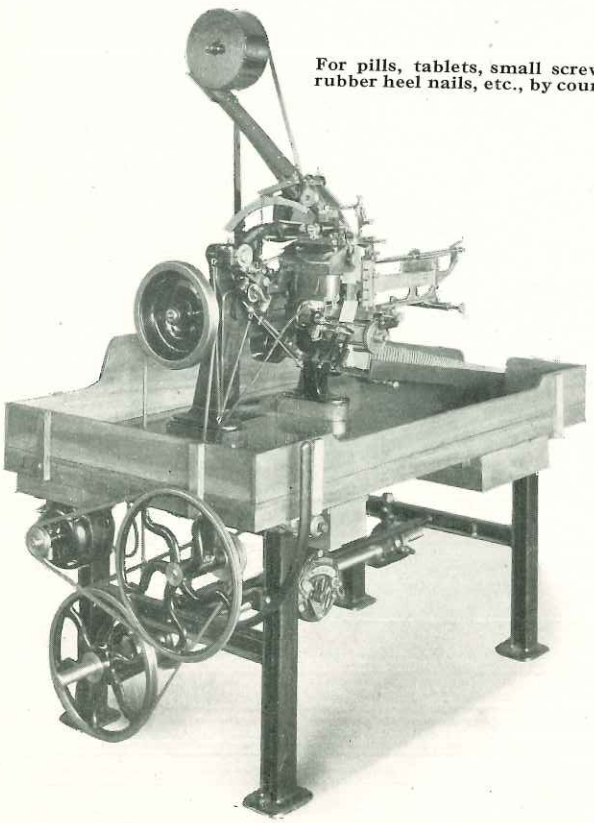
THE BROWN BAG FILLING MACHINE CO.

FITCHBURG, MASS., U. S. A.

Manufacturers of Automatic Machines for Putting Up Dry Materials and Seeds in Flat Packets



Bag Filler for use by seedsmen for filling large quantities of peas, corn, etc., by weight (4 to 5 oz.). Also fills small candies, salted nuts and chocolate-covered raisins by weight and volume in flat bags.



For pills, tablets, small screws, rubber heel nails, etc., by count.

BROWN BAG-FILLING MACHINES

Are designed for the filling of flat paper bags with measured quantities of dry materials, seeds, granules, tablets, pills, or powders. They measure the material, open the bag, fill it, gum it, turn and seal the flap and deliver the packed bags stacked.

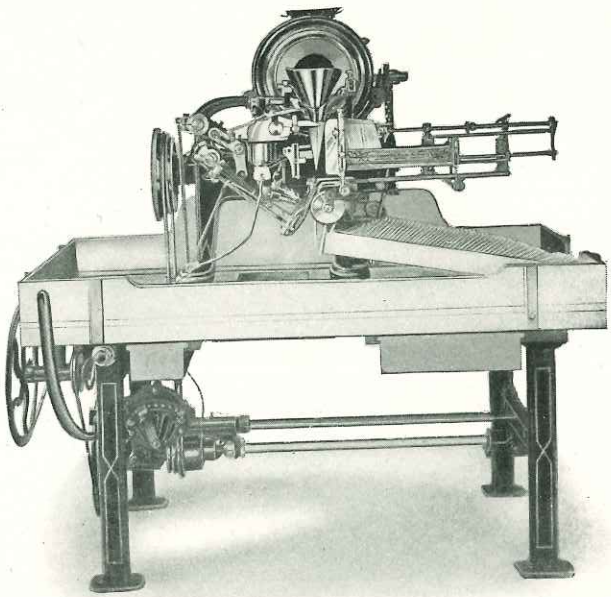
The machine requires but one operator to attend to it and runs automatically, discharging the sealed packets at the rate of two to three thousand per hour, according to the material to be packeted, dry and ready for packing, or immediate use.

Any kind of dry, granulated or compressed material or any seed that will pour can be handled by the machine. Material is measured with absolute accuracy, in respect to both count and weight, and can be regulated to fill from one ounce to a fraction of a grain. When once fixed, over a hundred thousand bags may be filled without variation giving a net saving of as high as ten per cent over handwork.

The Brown Bag Filling Machine Company will install one or more machines in the plant of a manufacturer who has need for its work either daily or sufficiently often to warrant installation.

THE BROWN BAG FILLING MACHINE CO.

For manufacturers with a small output or those who wish to send out samples to large numbers the Brown Bag Filling Machine Company has devised a plan whereby we will do the filling in our plant on a job basis. The material is shipped in bulk to our plant at Fitchburg, Mass., where we convert it, by weight or count as desired, completing the filling operation. Material in bag is then either shipped to manufacturer for mailing or mailed direct. This work is done on a contract basis and is particularly useful to the occasional packer of large quantities of samples to whom we can promise prompt delivery.



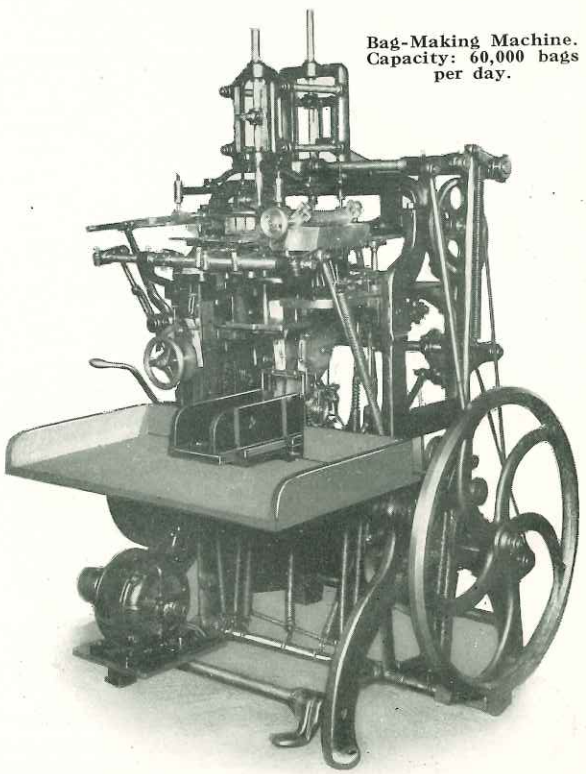
For use by seedsmen and for cocoa, chocolate and any free flowing materials from a few grains to 3 or 4 oz. where the volume is not excessive.

BROWN BAG-MAKING MACHINE:

This machine is the highest development in envelope machines, is most thoroughly and carefully made, and is warranted to make bags that are tight at the corners, absolutely alike and perfectly true and even. It can work on glassine, kraft or other types of paper.

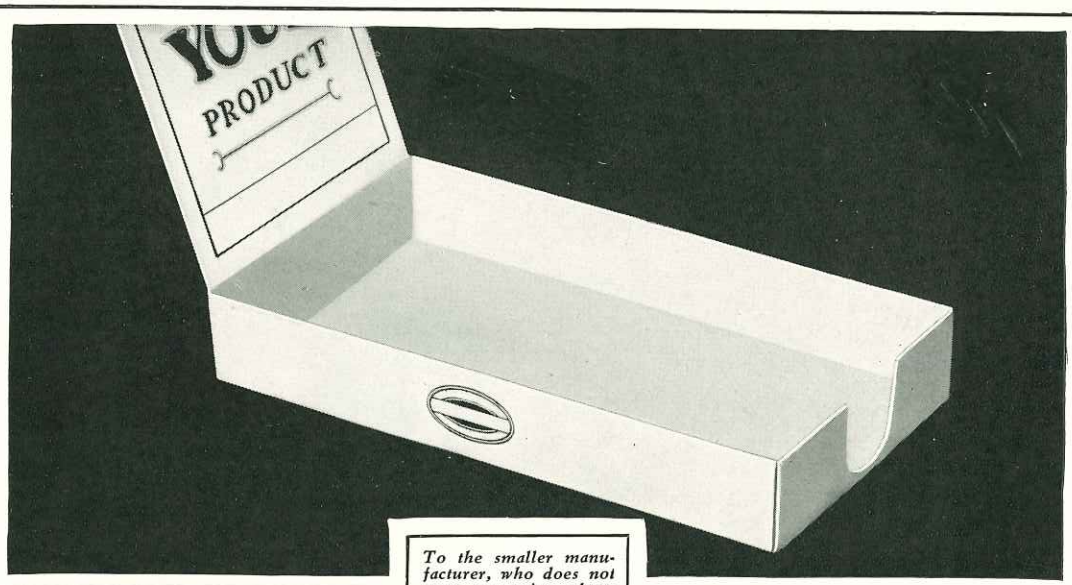
Interchangeable parts can be supplied with this machine to make different sizes of bags, and changes can be made from one size to another very quickly and without trouble, and without the services of a machinist.

The machine is operated by one person, and can be run by a quarter horse-power motor.



Bag-Making Machine. Capacity: 60,000 bags per day.

TO INTRODUCE YOUR NEW PRODUCT



To the smaller manufacturer, who does not want expensive plates and art work, we offer speculative ideas that will be gladly submitted without any obligation on your part. The Campbell Paper Box Co. is organized to serve smaller users as well as those who use large quantities!

THE retail shop into which your merchandise goes is a bewildering mixture of colorful packages. Your product must be not only *more* attractively packaged than those of your competitors—but must also be *the* outstanding display in the shop.

That's a rather large order, but Campbell containers *are* designed to be thoroughly distinctive in every respect. They can give your newly introduced merchandise *that* chance of being distinguished from the rest—a chance they might not get otherwise.

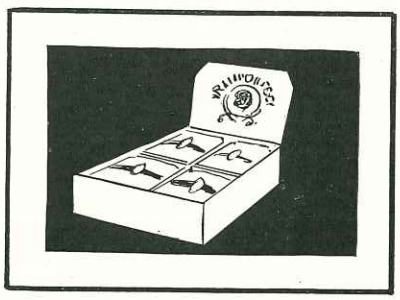
Remember—to you the new product is extremely important—but to the dealer it is just another item that *may* increase his profits. Give him the best package you can, and watch the cooperation you get! And the increased sales!

Our Merchandising and Art Departments apply scientific methods in designing new and distinctive containers for you.

Color, design and sales posssibilities—all are studied in order to make the strongest possible selling appeal to the consumer.

Campbell containers are as individualistic as they can be made!

Tell us your problem, and let us help you solve it!



Folding Boxes have been adapted to almost every type of merchandise. Have you tried using them?

CAMPBELL
PAPER BOX COMPANY

SOUTH BEND, IND.
910 S. Main Street

Manufacturers of
Paper Boxes, Shipping and Shop Tags

CONSOLIDATED PAPER CO.'S MODERN PACKAGES FOR YOUR MERCHANDISE

Folding Paper Boxes

For the individual package made of fine quality Box Boards. Printed in bright colors from your own designs or designs created in our own Art Department.

Plain Shells

For tight-wrapped packages.

Corrugated or Solid Fibre Shipping Cases

Made of fine quality high test Liners and Corrugated Straw Board, printed in Bold Poster Style in bright colors built to carry your merchandise safely to destination and

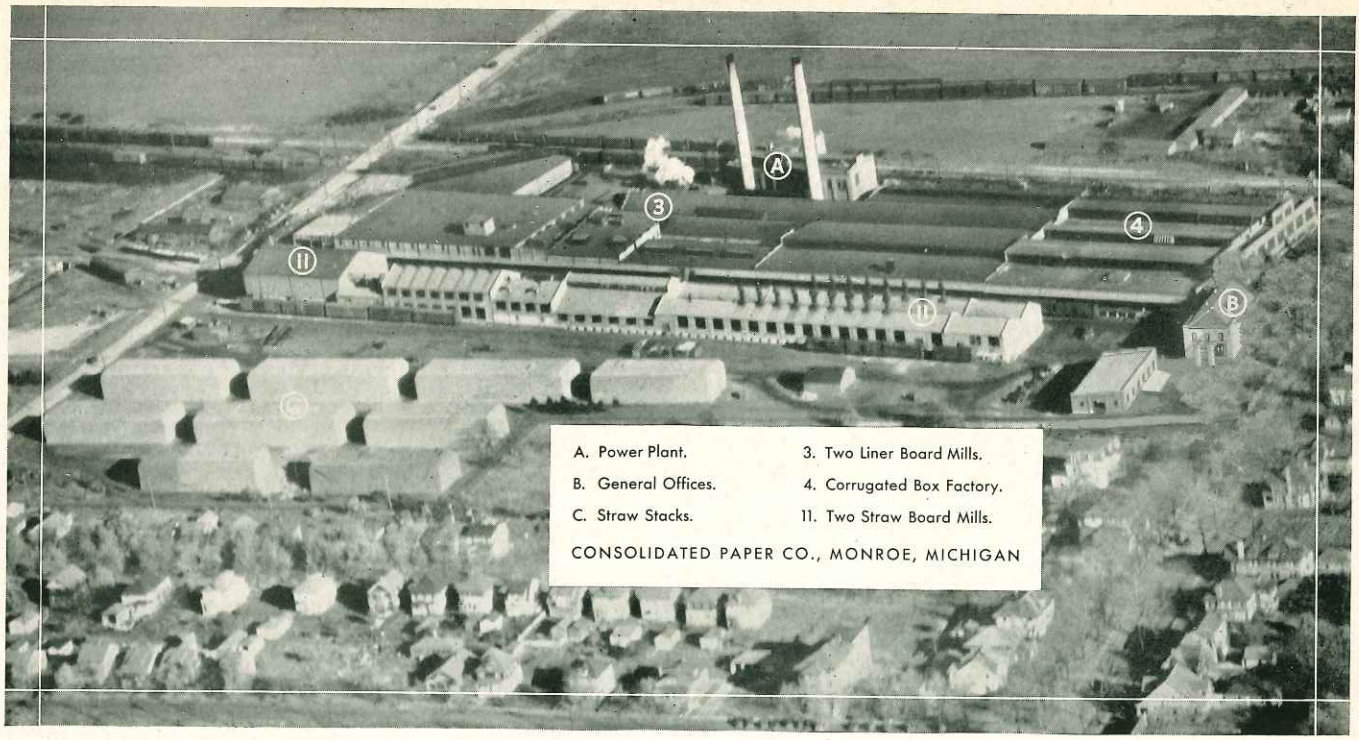
Specially Designed

Corrugated Shipping Cases to carry odd shaped, fragile or hard to pack merchandise on cushions of air safely to your customers.

At Consolidated Paper Co., you have at your service —Paper Mills producing 700 tons of Paper a day— Box Factories of very large capacity completely equipped for speedy and economical production — an Art Department and a Package Designing Department.

An opportunity to serve you will be appreciated

CONSOLIDATED PAPER CO.,
MONROE, MICH.



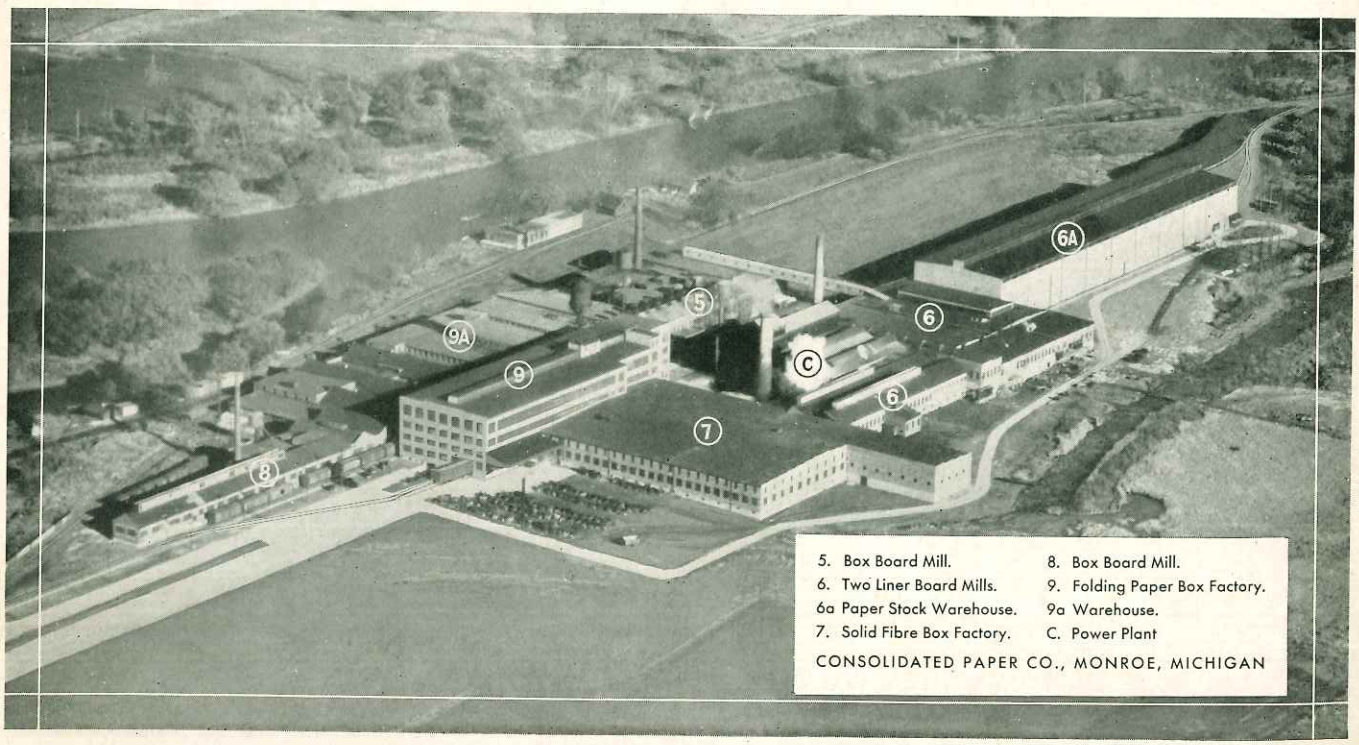
A. Power Plant.
B. General Offices.
C. Straw Stacks.
3. Two Liner Board Mills.
4. Corrugated Box Factory.
11. Two Straw Board Mills.

CONSOLIDATED PAPER CO., MONROE, MICHIGAN

These airplane photos show two groups of Consolidated Paper Company Plants at Monroe, Michigan.

The River Rouge, Michigan, Glenfield, Pa., Aurora, Illinois, and No. 1 Plant at Monroe, are not included.

CONSOLIDATED PAPER CO., MONROE, MICHIGAN



5. Box Board Mill.
6. Two Liner Board Mills.
6a Paper Stock Warehouse.
7. Solid Fibre Box Factory.
8. Box Board Mill.
9. Folding Paper Box Factory.
9a Warehouse.
C. Power Plant

CONSOLIDATED PAPER CO., MONROE, MICHIGAN

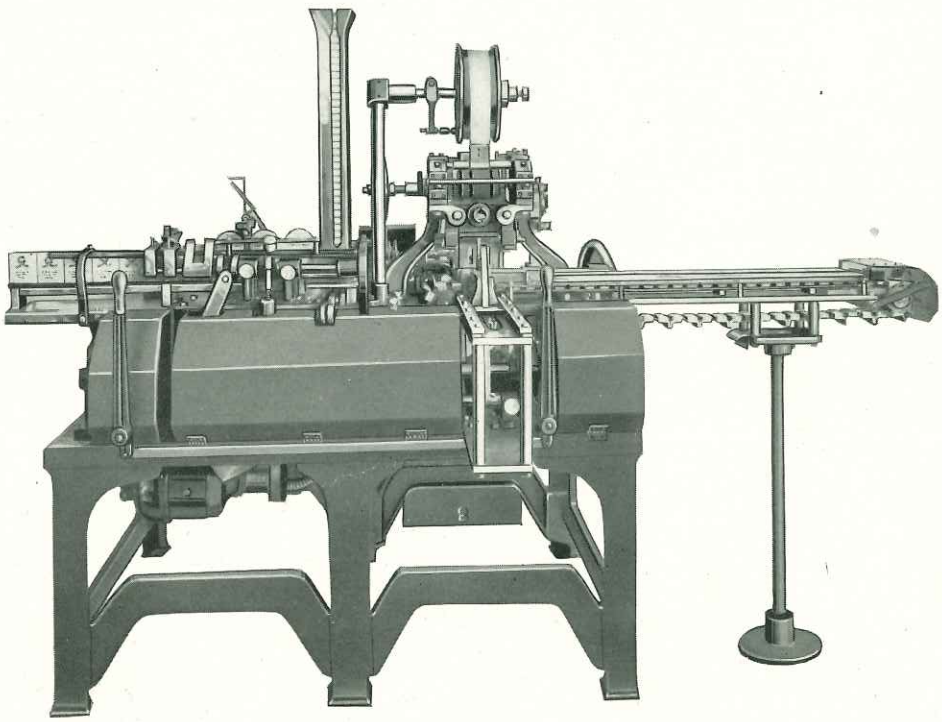
Cartoning Machinery Corporation

General Office and Plant
Newport, Rhode Island

London Office
13 Charing Cross, S. W. 1.

PACKAGING MACHINERY

CARTON LINING, COUNTING AND FILLING
COMBINATION WRAPPING AND CARTONING
CARTON LINING AND VOLUMETRIC FILLING
COMBINATION BANDING AND CELLOPHANE WRAPPING
CIRCULAR FOLDING AND BOTTLE OR TUBE CARTONING
BAG FILLING MACHINES SEALING MACHINES BUNDLING MACHINES



COMBINATION WRAPPING AND CARTONING MACHINE

This company builds machines that are especially adapted to prepare the small unit packages so prevalent in today's merchandising.

The line includes twenty different machines, each designed to operate as a complete unit in automatic packaging.

The equipment built by this company is in successful use in such well-known companies as Smith Bros., Inc., Planters Nut & Chocolate Co., C. F. Mueller Co., Blumenthal Bros., Chas. H. Phillips Chemical Co., Bunte Bros., Warren Featherbone Co., Marshall Field & Co., Assembled Products Co., Henry Heide, Inc., Tru-Lax Products Co., Autosales Corporation, Mason Au & Magenheimer Co., Euclid Candy Co., Eagle Pencil Co., Eberhard Faber Pencil Co., Joseph Dixon Crucible Co., Russell Playing Card Co., and Wilbur-Suchard Chocolate Co.

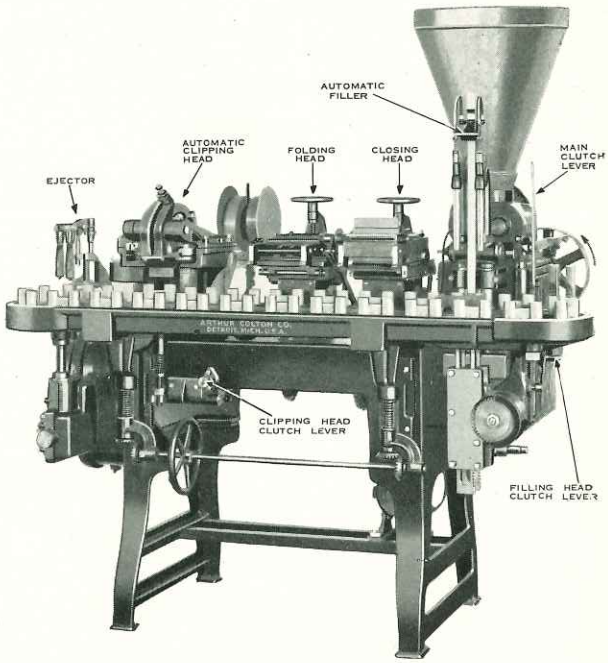
The experience of this organization in the small package field qualifies us to undertake many of your packaging problems. Write us for further information.

Arthur Colton Company

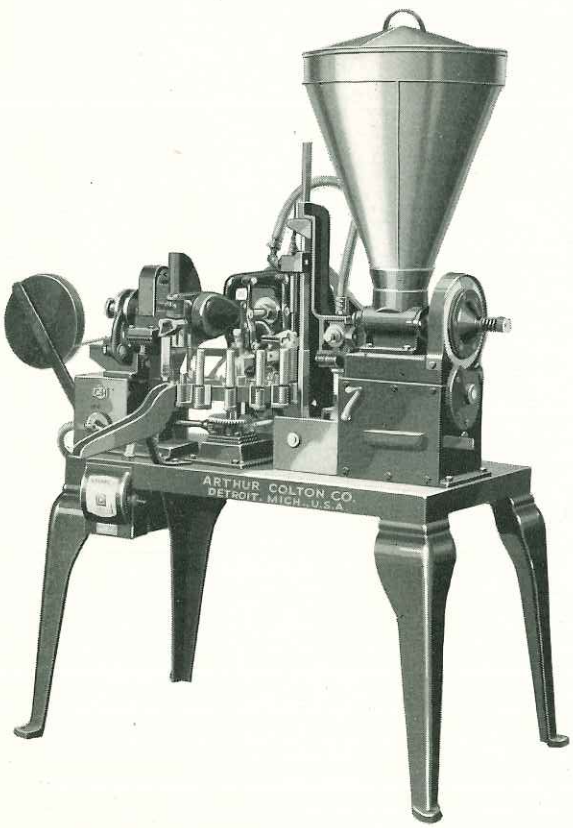
Detroit, Mich.

PRODUCTS:

- Automatic Pill Machines
- Tube Filling Machines
- Tube Closing Machines
- Tube Clipping Machines
- Gelatin Pill Coaters
- Sugar Coating Pans
- Mixers
- Granulators
- Grinders
- Sifters
- Tablet Machinery
- Suppository Machinery
- Tablet Counting and Boxing Equipment
- Can, Jar and Bottle Fillers
- Tube Clips
- Conveyor Tables, etc.



No. 7 Automatic Filling, Closing and Clipping Machine



No. 14 Automatic Tube Filling, Closing and Clipping Machine

We are the largest makers of Pharmaceutical Machinery and Tube Filling and Closing Equipment in the world. Our line embraces over two hundred machines designed to facilitate the making and packing of practically all medicinal products and toilet goods. We also design and build all kinds of special purpose machines.

Write for Catalog "P"

DEERFIELD SILVER

EMBOSSED GLASSINE

Made in Herringbone, Frost, Cobweb and Alligator Patterns

PAPER is so common and so constantly used by civilized man that one rarely thinks of paper making as an Art. Only those familiar with its processes can appreciate the knowledge of nature's laws, the sense of color values and the care that is required in making distinctive papers of quality for specific uses. The Art of Paper Making is historic. As civilization advanced, products and processes were impelled by its demands, until it is a truism that "The Consumption of Paper is the measure of a people's civilization."

GLASSINE PAPERS are the result of a demand for sanitary packages and advertising. They are clean, transparent, air-tight, greaseproof, and moisture repellant. When waxed they are moistureproof. When printed in color, they are unusually attractive.

THE HOME OF "BUCK" AND "DOE" as the Mill of the Deerfield Glassine Company has been christened, is the result of an experience of over a quarter of a century in the paper manufacturing plants of America and Europe. The Village of Monroe Bridge, Massachusetts was acquired and developed to meet the requirements of particular converters and consumers of quality glassine papers. The Village has no coal—no dirt. The water supply is unlimited and of the finest quality.

THE Mill is equipped with modern machinery especially for the purpose of manufacturing Glassine Papers. The chemical fibre used is prepared for the requirements of this plant from superior Eastern Spruce Wood. Western Massachusetts is famous [illegible]

Two Paper Machines, known as "Buck" and "Doe" [illegible] Papers exclusively.

The staff of the Deerfield Glassine Company is available to [illegible] consumers in the selection of grades of paper for specific uses. Send for samples [illegible] plateglass is to glass, so plateglassine is to glassine. [illegible] uses. Special Grades on application.

All communications regarding orders, shipments, etc., should be addressed to

SALES AND SERVICE

DEERFIELD GLASSINE CO.

5 Beekman St. New York City

[illegible] (Window Envelopes)

24 x 36 - 500 - 20 lb. basis

Arthur Colton Company

Detroit, Mich.

PRODUCTS:

- Automatic Pill Machines
- Tube Filling Machines
- Tube Closing Machines
- Tube Clipping Machines
- Gelatin Pill Coaters
- Sugar Coating Pans
- Mixers
- Granulators
- Grinders
- Sifters
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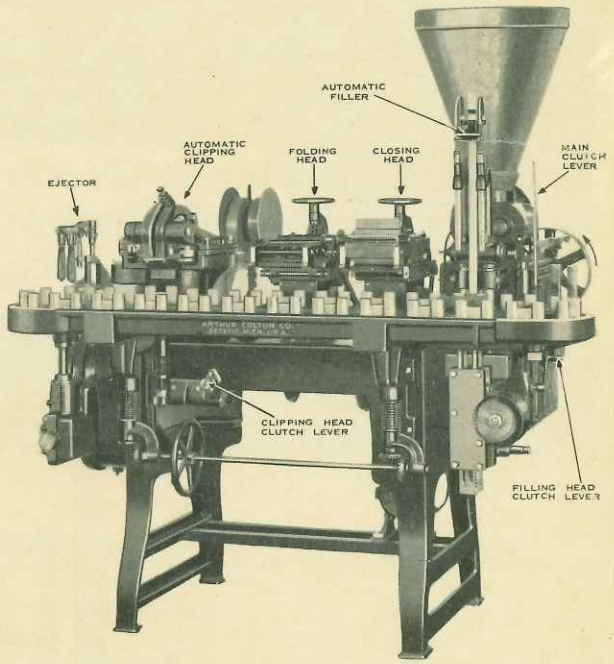
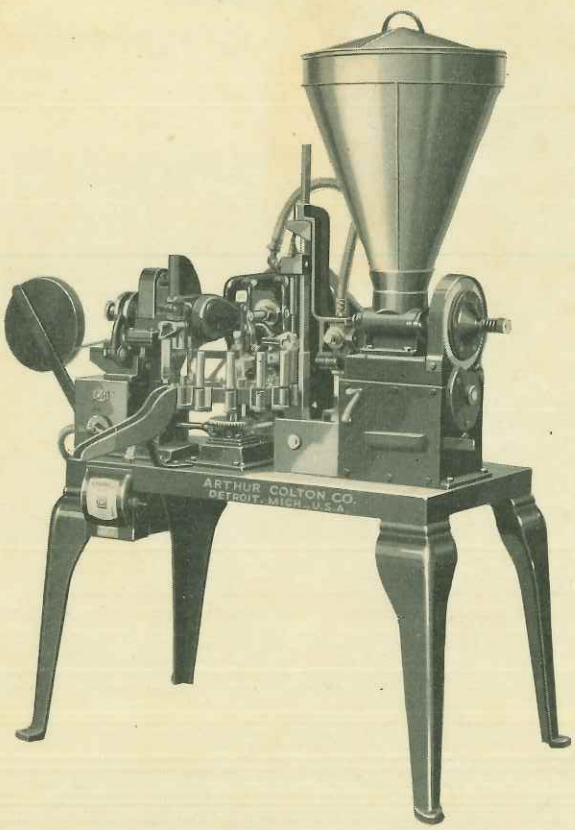
- Can, Jar and Bottle Fillers
- Tube Clips
- Conveyor Tables, etc.



No. 7 Automatic Filling, Closing and Clipping Machine



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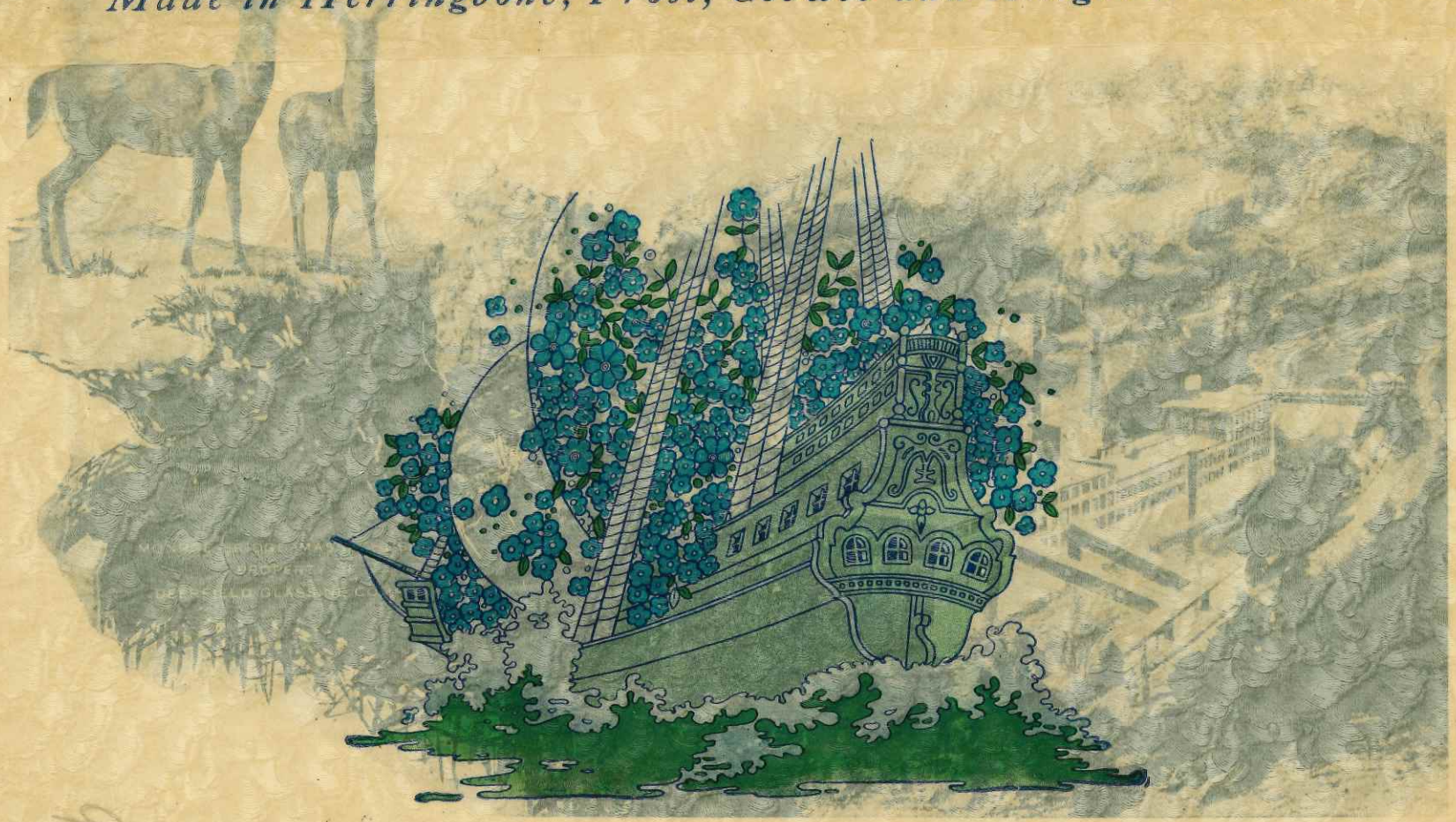
Write for Catalog "P"

DEERFIELD SILVER

EMBOSSED GLASSINE

Made in Herringbone, Frost, Cobweb and Alligator Patterns



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THE HOME OF "BUCK" AND "DOT" as the Mill of the Deerfield Glassine Company has been christened, is the result of an experience of over a quarter of a century in the paper manufacturing plants of America and Europe. The Village of Monroe Bridge, Massachusetts was acquired and developed to meet the requirements of particular converters and consumers of quality glassine papers. The Village has no coal—no dirt. The water supply is unlimited and of the finest quality.

THE Mill is equipped with modern machinery especially for the purpose of manufacturing Glassine Papers. The chemical fibre used is prepared for the requirements of this plant from superior Eastern Spruce Wood. Western Massachusetts is famous for fine papers. Conditions are ideal.

Two Paper Machines, known as "Buck" and "Dot," produce over a carload a day of Quality Glassine Papers exclusively.

The staff of the Deerfield Glassine Company is available to consult with you as to the proper grades of paper for specific uses. Send for samples of our Papers. As the [illegible] plateglass is to glass, so plateglassine is to glassine. Special Grades on application.

All communications regarding orders, shipments, etc., should be addressed to

SALES AND SERVICE

DEERFIELD GLASSINE CO.

5 Beekman St., New York City

(Envelopes)

24 x 36 - 500 20 lb. basis

Arthur Colton Company

Detroit, Mich.

PRODUCTS:

- Automatic Pill Machines
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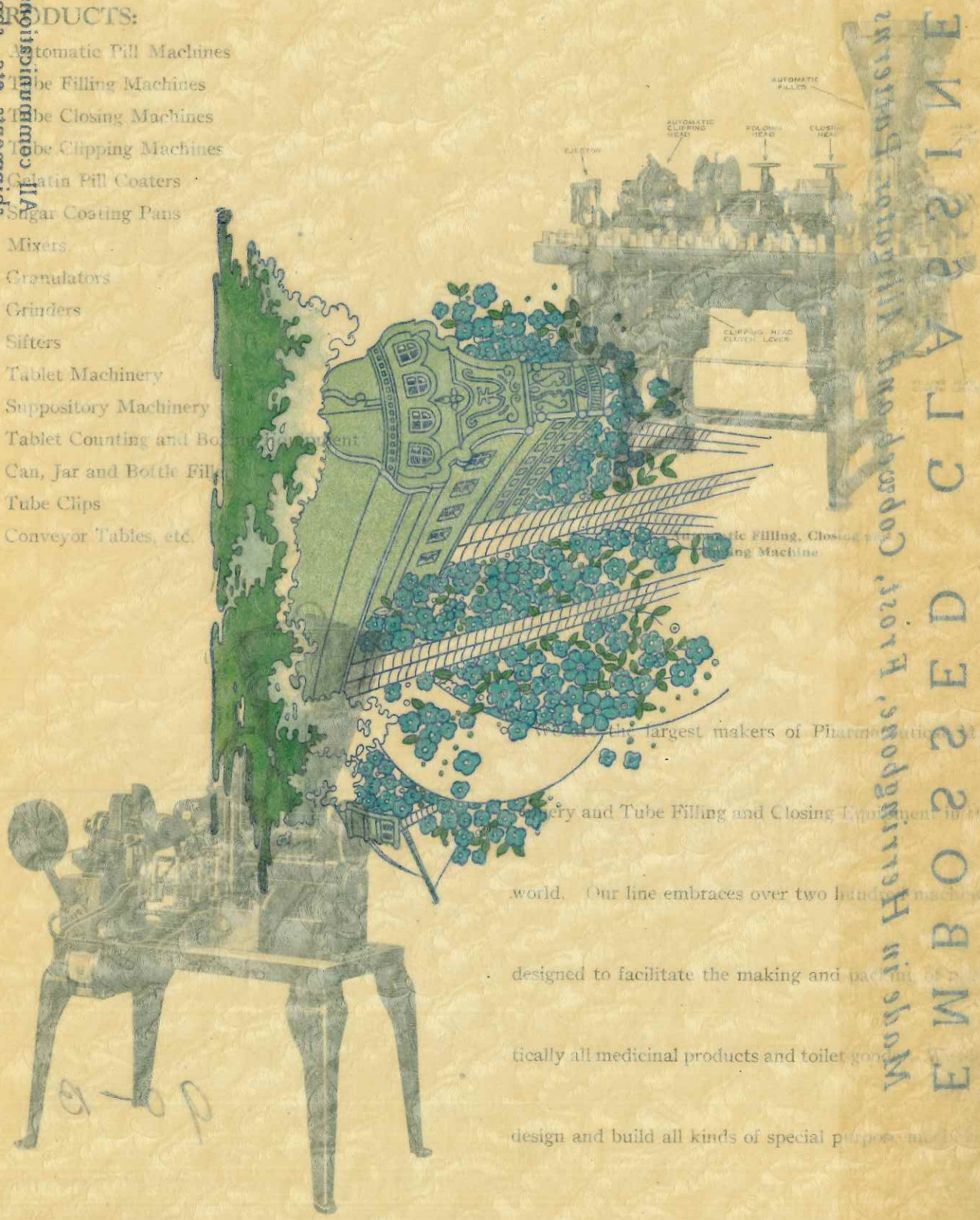
- Tablet Counting and Bo[illegible]ment
- Can, Jar and Bottle Fill[illegible]
- Tube Clips
- Conveyor Tables, etc.



[illegible]ic Filling, Closing [illegible]
[illegible]ing Machine

[illegible] largest makers of Pharmaceutical [illegible]

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world. Our line embraces over two hund[illegible] machines

designed to facilitate the making and pac[illegible]

tically all medicinal products and toilet goo[illegible]

design and build all kinds of special p[illegible]

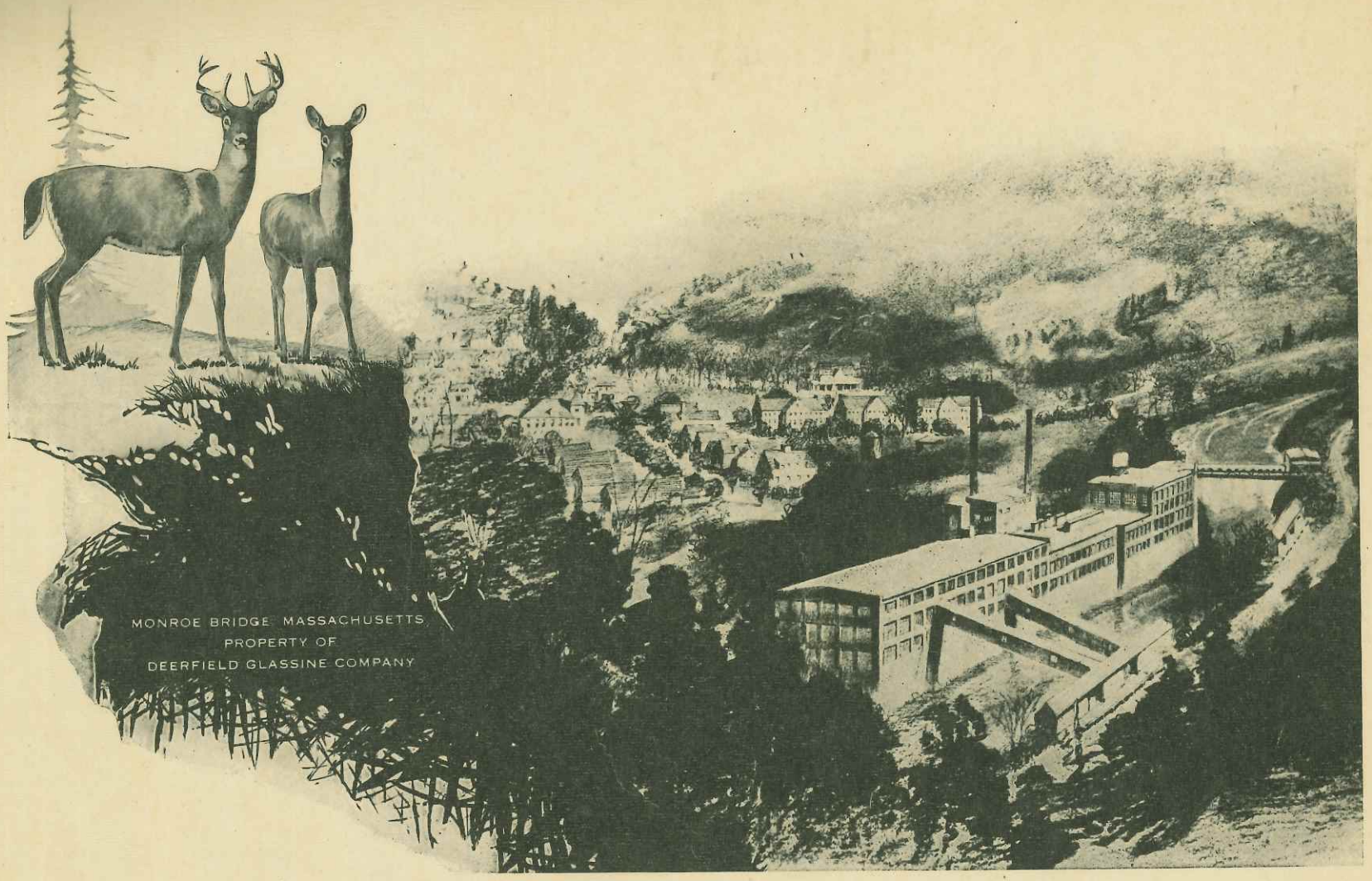
No. 14 Automatic Tube Filling, Closing and Clipping Machine

Write for Catalog "P"

DEERFIELD GLASSINE CO.
5 Beekman St., New York City

SALES AND SERVICE
to bassines pd blums, etc., are shipped
promptly from our Detroit warehouse stock.

EMBOSSED GLASSINE
DEERFIELD



PAPER is so common and so constantly used by civilized man that one rarely thinks of paper making as an Art. Only those familiar with its processes can appreciate the knowledge of nature's laws, the sense of color values and the care that is required in making distinctive papers of quality for specific uses. The Art of Paper Making is historic. As civilization advanced, products and processes were impelled by its demands, until it is a truism that "The Consumption of Paper is the measure of a people's civilization."

GLASSINE PAPERS are the result of a demand for sanitary packages and advertising. They are clean, transparent, air-tight, greaseproof, and moisture repellant. When waxed they are moistureproof. When printed in color, they are unusually attractive.

THE HOME OF "BUCK" AND "DOE" as the Mill of the Deerfield Glassine Company has been christened, is the result of an experience of over a quarter of a century in the paper manufacturing plants of America and Europe. The Village of Monroe Bridge, Massachusetts was acquired and developed to meet the requirements of particular converters and consumers of quality glassine papers. The Village has no coal—no dirt. The water supply is unlimited and of the finest quality.

THE Mill is equipped with modern machinery especially for the purpose of manufacturing Glassine Papers. The chemical fibre used is prepared for the requirements of this plant from superior Eastern Spruce Wood. Western Massachusetts is famous for fine papers. Conditions are ideal.

Two Paper Machines, known as "Buck" and "Doe" produce over a carload a day of Quality Glassine Papers exclusively.

The staff of the Deerfield Glassine Company is available to converters and consumers in the selection of grades of paper for specific uses. Send for samples of our PLATEGLASSINE—the transparent kind—"as plateglass is to glass, so plateglassine is to glassine." GLASSITE—less expensive, but suitable for many uses. Special Grades on application.

PLATEGLASSINE W (Window Envelopes)
24 x 36 - 500 20 lb. basis

Arthur Colton Company

Detroit, Mich.

PRODUCTS:

Automatic Pill Machines
Tube Filling Machines
Tube Closing Machines
Tube Clipping Machines
Gelatin Pill Coaters
Sugar Coating Pans
Mixers
Granulators
Grinders
Sifters
Tablet Machinery
Suppository Machinery
Tablet Counting and Bo[illegible] Equipment
Can, Jar and Bottle Fil[illegible]
Tube Clips
Conveyor Tables, etc.

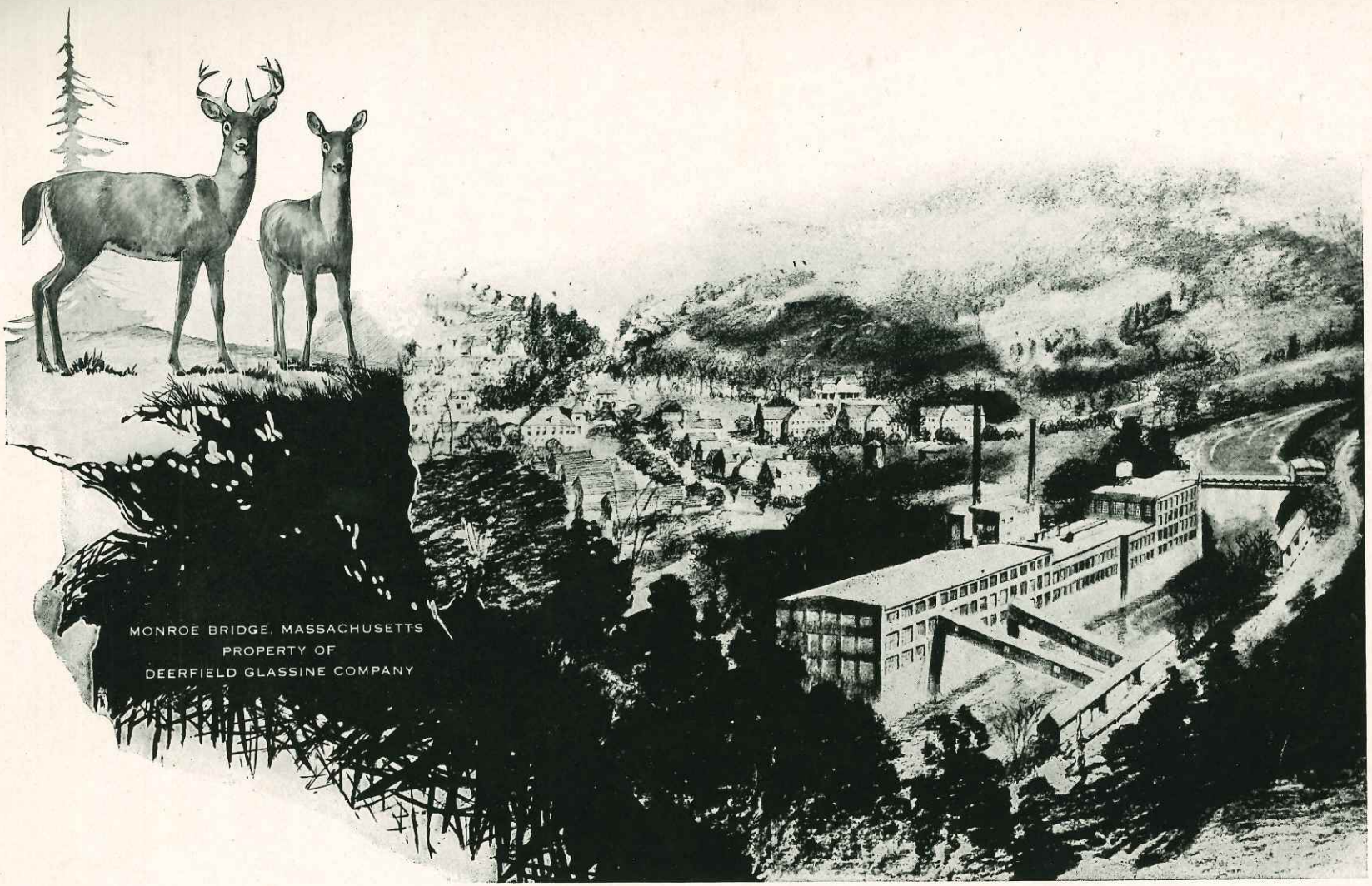
[illegible] Filling, Closing [illegible]
[illegible]ing Machine

No. 14 Automatic Tube Filling, Closing and Clipping Machine

[illegible] largest makers of Pharm[illegible]
[illegible]ery and Tube Filling and Closing Equipment in the
world. Our line embraces over two hundred machines
designed to facilitate the making and packing of
tically all medicinal products and toilet
design and build all kinds of special purpose

Write for Catalog "P"

DETROIT GASSINE CO.
SALES AND SERVICE
2 BATTERY ASSINE MF (Window Envelopes)
Size 9 x 12 - 200 - 80 lb. - psted
Made in Hartford, Conn., Copyright and Printed in U.S.A.
EMBOSSED GASSINE
DETROIT



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CONSOLIDATED PACKAGING MACHINERY CORP.

1400 WEST AVE., BUFFALO, N. Y.

HOEPNER
AUTOMATIC SCALE CO.

Operating

CaPeM
MACHINERY CORP.

AUTOMATIC

WEIGHING FILLING MEASURING SEALING

BAG CLOSING CAPPING TUBE FINISHING

PRODUCTION EQUIPMENT

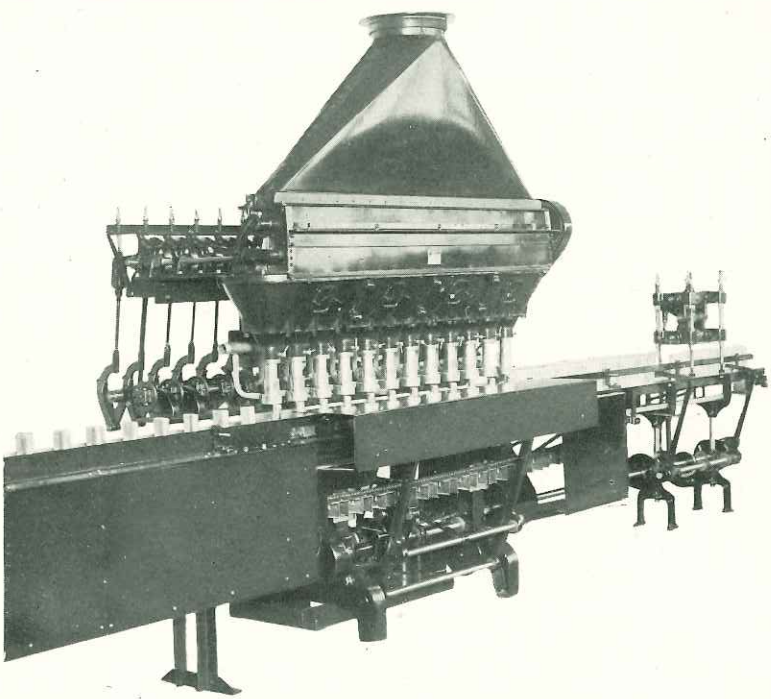
Offices

NEW YORK

BOSTON

CLEVELAND

MEMPHIS



12 Head Powder Filler—Type B12S

Offices

CHICAGO

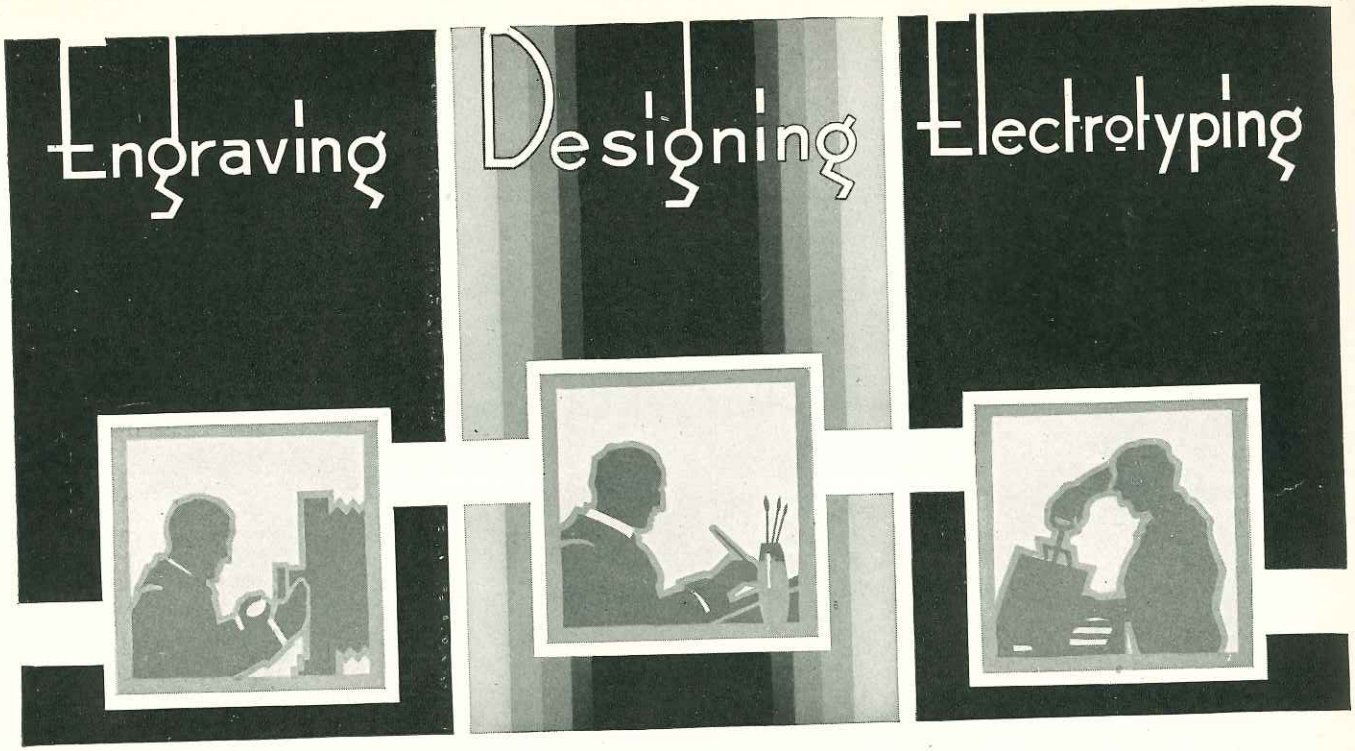
SAN FRANCISCO

HOUSTON

LONDON, ENG.

Among those who have found an answer to varied packaging problems through Hoepner or CaPeM equipment are the following to whom we point with justifiable pride.....

E. I. DuPont de Nemours
American Sugar Refining
Swift & Co.
Beechnut Packing
Cheeseborough Mfg. Co.
Dagget & Ramsdell
Emerson Drug Co.
General Foods, Inc.
McKesson & Robbins
Quaker Oats Co.
Spencer Kellogg & Sons
Kraft Phenix Cheese
Chase & Sanborn Co.
International Salt Co.
General Chemical Co.
Mentholatum Co.
Standard Oil Co.
Bristol-Myers
Sears-Roebuck Co.
E. R. Squibb & Sons
Grasseli Chemical Co.
Marshall Field & Co.
Great Western Sugar
H. O. Company



A Complete Service

PROPER equipment plus experienced personnel is the basis of Crescent ability.

Package users as well as manufacturers of printed packaging materials will find here a complete service in package design and the production of better printing plates.

Do you have your copy of that interesting booklet "Sales Appeal in Modern Packaging"? A request on your letterhead will bring it free of charge.

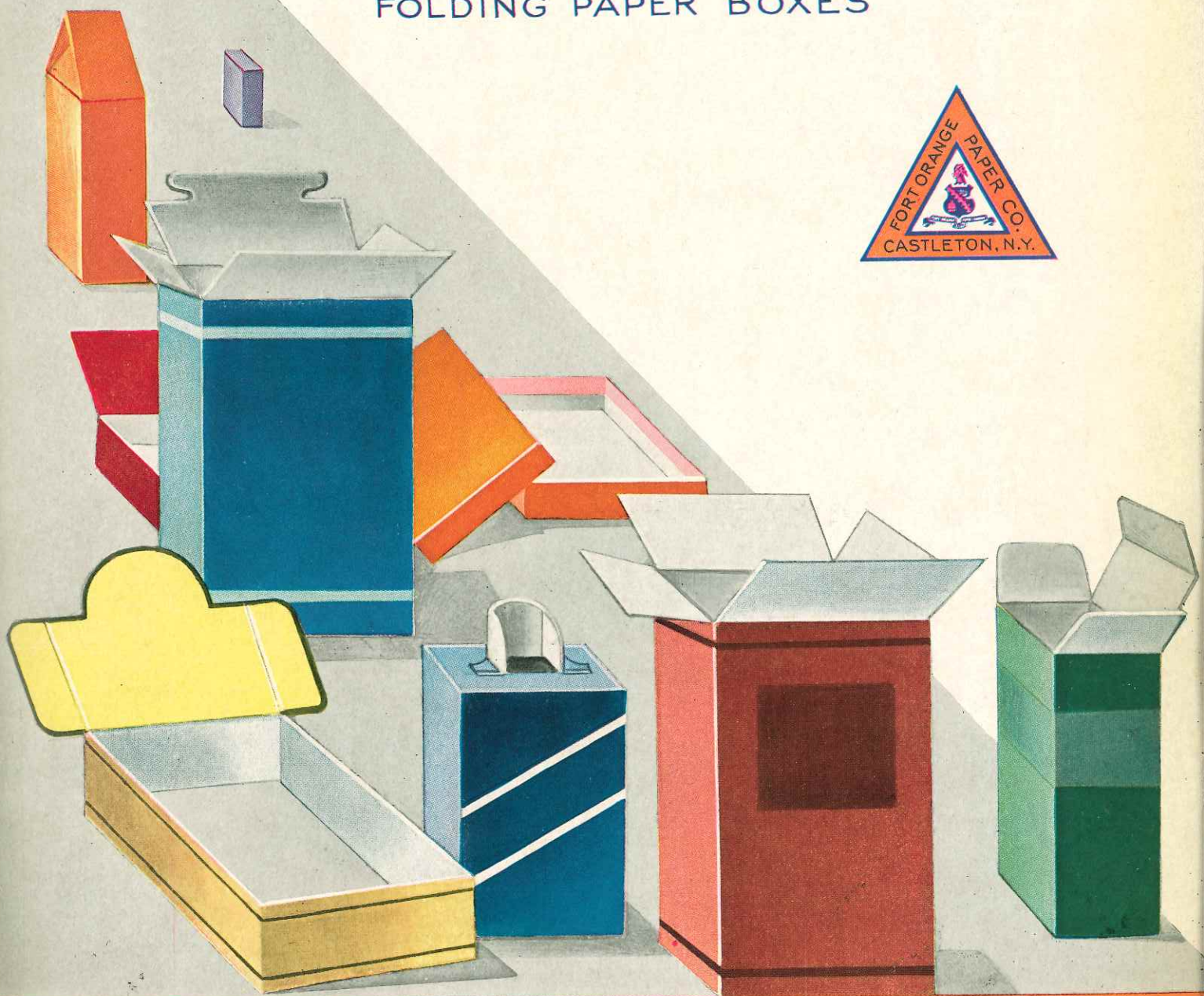
CRESCENT ENGRAVING COMPANY

KALAMAZOO MICHIGAN

DESIGNERS / ENGRAVERS / ELECTROTYPERS TO THE PACKAGING INDUSTRY

FORT ORANGE PAPER CO.

ESTABLISHED 1858
CASTLETON-ON-HUDSON, N.Y.
FOLDING PAPER BOXES



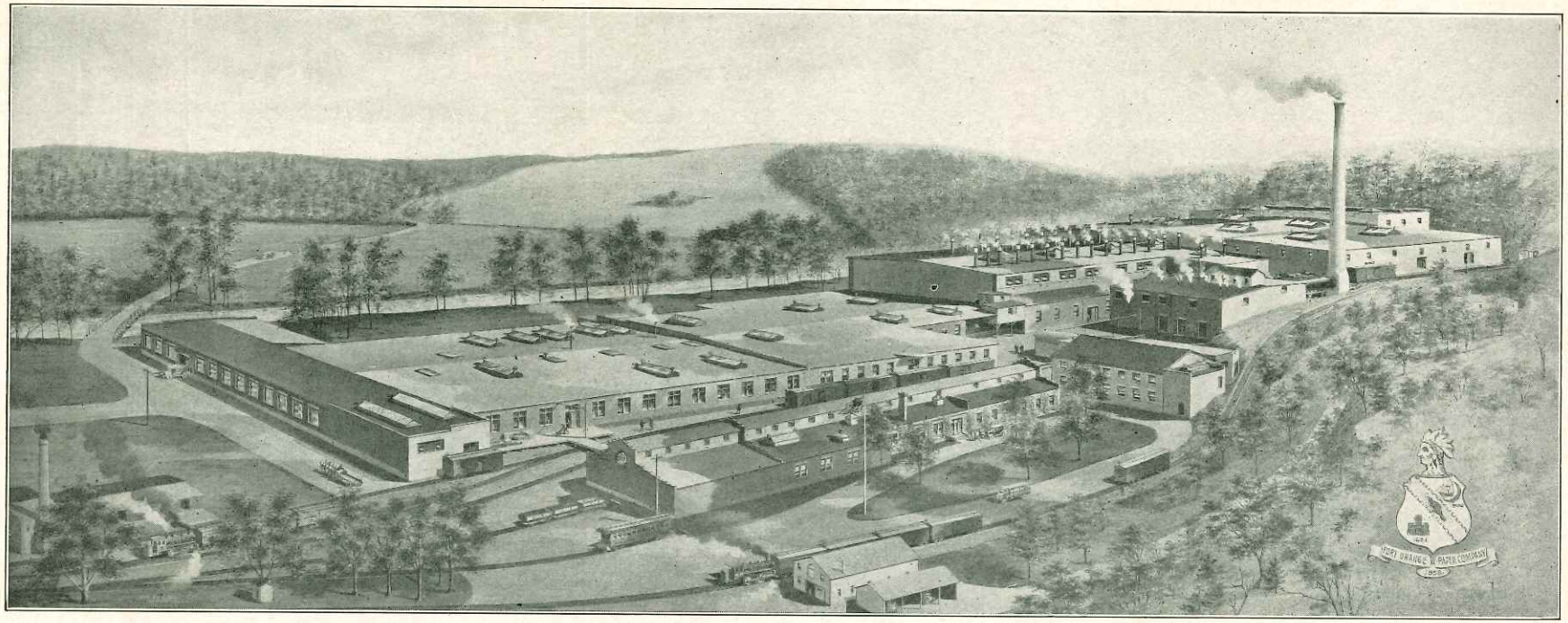
A NOVELTY YESTERDAY
A NECESSITY TODAY

We have in our model plant hundreds of highly trained specialists working day and night with this great objective in view,

QUALITY AND SERVICE

THREE MILLIONS DAILY

92-A



FORT ORANGE PAPER COMPANY

CASTLETON ON HUDSON, NEW YORK

ONE of the three largest plants in the world devoted exclusively to the manufacture of Folding Paper Cartons, embracing the entire process of manufacture from the making of the board to the finished carton. Situated in the Capital District of New York State, with shipping facilities of the New York Central's noted "Water Level Route" or export the World over by the "Deeper Hudson."

Capacity 3 Millions Daily

Established 1858

A TRADE-MARK THAT MEANS SOMETHING!

A recent investigation, by a prominent advertising agency, discloses the fact that most people are unable to identify trademarks and slogans with the firms which display them.

The investigators did not include the Dejonge Seal of Quality in their questionnaire. Nor were Dejonge customers conspicuous among those who were quizzed.

All of which probably explains why they got these results. For the Dejonge seal and trademark are known to buyers of fine fancy papers throughout the industry.

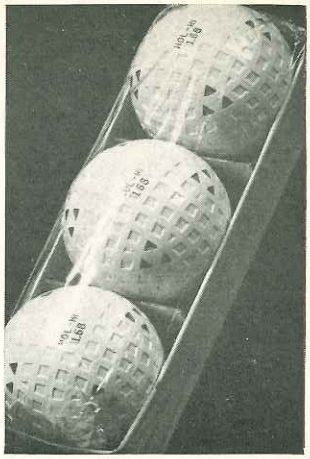
And, conversely, fine fancy papers are known to the discriminating by the Dejonge label which they bear.

It is profitable to bear both facts in mind when purchasing. Look for the Dejonge label!

LOUIS DEJONGE & CO.

NEW YORK CHICAGO

PHILADELPHIA



ACCEPTED FOR 1930

TODAY Cellophane is used as the logical material for packaging a wide variety of products. Its success has made it accepted as an important factor in merchandising and packaging for 1930.

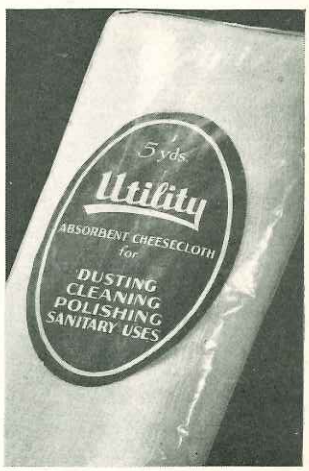
Manufacturers have found that Cellophane can work miracles in dressing up a product, enhancing its eye-appeal, stimulating its sales. Consumers, on the other hand, have learned that Cellophane keeps a product in perfect condition. Naturally they are showing a preference for things wrapped in this modern way.

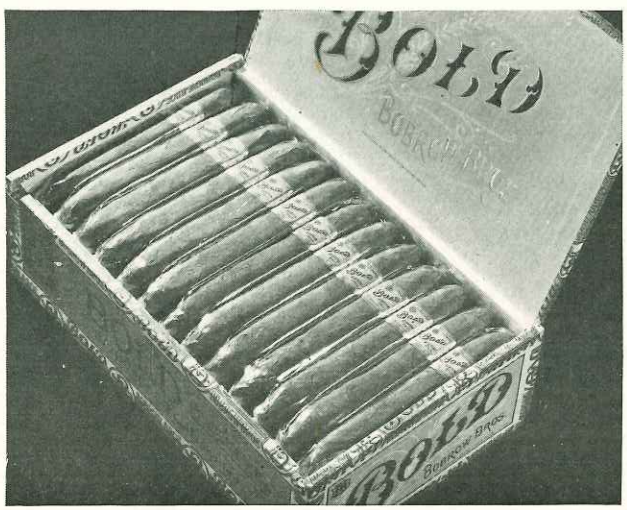
The problem of how to adapt Cellophane to the peculiar needs of many widely differing products has been successfully solved by our Package Development Department. Its services are at your disposal.

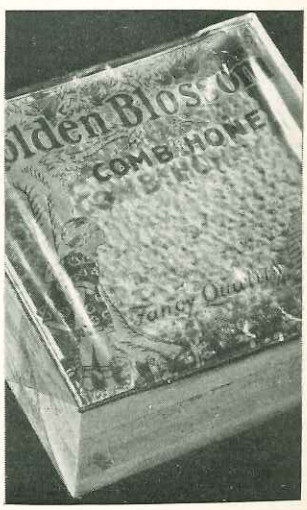
Du Pont Cellophane Co., Inc., 2 Park Ave., New York City

DU PONT CELLOPHANE
REG. U.S. PAT. OFF. AND CANADA

Cellophane







Cellophane is the registered trademark of du Pont Cellophane Company, to designate its transparent cellulose sheeting.

FOR GREATER SALES APPEAL IN PACKAGING ...USE COLLINS MODERN BOX PAPERS

BOX PAPER creations designed by Collins will suggest your impression of smartness and modernity — swiftly and surely.

You will want to see and test for yourself the possibilities of Collins Box Papers. We suggest that you write for the two complete sample books — The "RED BOOK" of Fancy Box Papers and the "BLUE BOOK" of Standard Box Papers.

◆

A PAPER FOR EVERY PURPOSE

◆

COLLINS

COMPLETE LINE OF STANDARD AND FANCY BOX PAPERS FOR EVERY MODERN PACKAGING NEED

FANCY BOX PAPERS

PASTELS
ORIENTALS
METALLICS
GOLD PRINTS
SILVERETTES
FUTURIST
OLD SPANISH
FLASHLIGHT
PERSIAN PRINTS
FLORENTINE PRINTS

STANDARD BOX PAPERS

VELUMETS
CRYSTALLINS

A. M. COLLINS MFG. CO.
1518 WALNUT ST. - - PHILADELPHIA

◆ ◆ ◆

NEW YORK—GEO. W. MILLAR & CO.
284-290 Lafayette Street

BOSTON—HENRY L. GOODMAN
110 High Street

CHICAGO—A. M. COLLINS MFG. CO.
Conway Building

PACIFIC COAST—ZELLERBACH PAPER CO.

« OLD SPANISH
Series 53 Brown

« PERSIAN PRINT
Series 732—Black

« PASTEL PAPERS
Series 215—Buff

« COLOR PRINTS
Series 750—Orange

« SILVERETTES
Series 4105—White

« PASTEL PAPERS
Series 200—Green

ECONOMIC MACHINERY COMPANY

Machinery for Labeling Various Styles of Packages

WORCESTER, MASS.

Chicago: Napoleon Savaria, 410 Monadnock Bldg. New York: 15 Park Row Montreal: Golden Gate Mfg. Co., Ltd.

PRODUCTS

Machines for Pasting Paper Labels and Foils on Bottles, Jars, Tumblers, Cans and certain styles of Paper Boxes and Cartons.

Economic Machinery Company has been engaged exclusively in the manufacture of labeling machines for more than twenty-five years.

Superior mechanical construction combined with the best of materials and skilled workmanship makes World Labelers the most satisfactory and durable machines obtainable. A staff of factory-trained men give expert advice on labeling problems. Thousands of satisfied customers heartily endorse Economic service.

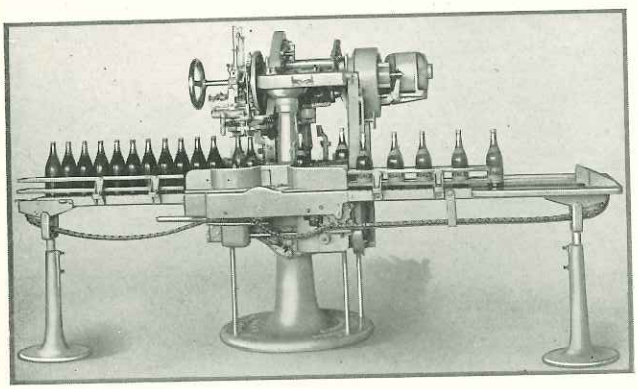
The Company manufactures a complete line of hand-fed and automatic machines to meet all labeling requirements successfully and economically.

Every World Labeler is guaranteed to give satisfaction.

Write for advice regarding your labels, and send labeled samples of your bottles or packages showing the way you want them labeled on the machine. Detailed information and quotation will be sent to you promptly.

Let World Labelers solve your labeling problems.

WORLD AUTOMATIC STRAIGHTAWAY LABELER



The *World Automatic Straightaway Labeler* is fully automatic and is made in two types, the *Single* for face labeling (as illustrated) and the *Double* labeler for applying front and back labels in one operation. It is particularly designed for labeling flat, round, oval or panel bottles and jars and other packages, and various sizes of bottles can be handled on the same machine.

Due to its simple, yet durable construction, operating parts are readily accessible and an experienced operator can easily and quickly change the labeling attachments from one size to another. The bottles are labeled in an upright position, automatically timed and centered and each label is correctly placed. The labels are gummed in the center as well as on the edges insuring uniform and smooth labeling. The conveyor can be made to individual requirements and connected to other automatic units.

All machines are equipped with the Alemite Push Type High Pressure Lubricating System.

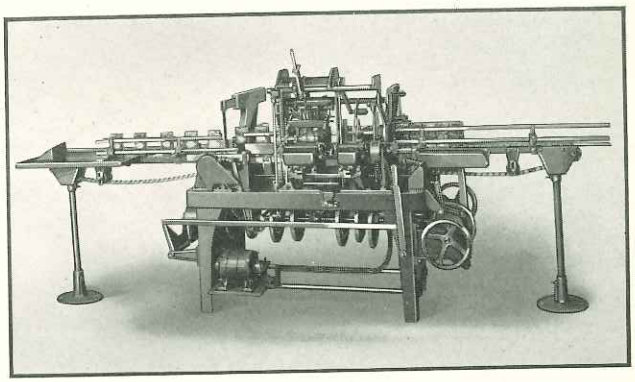
General specifications:—Motor, ½ H.P. Floor space required, 3 ft. x 10 ft. Height, 4½ ft. Shipping weight, 1600 lbs. single, 1850 lbs. double.

WORLD AUTOMATIC ROTARY LABELER

The *World Automatic Rotary Labeler* efficiently meets the high production required in large plants. The conveyor can be designed as desired and connected with other automatic units. Separate conveyors with independent motor drive are furnished as required.

The machine applies *body and neck labels and foil in one operation* to pint, split or quart bottles. A special machine is required when quart bottles are to be foiled. The Rotary labeler is made for labeling bottles or jars of various types from two-ounce to one-quart size, and several sizes can be labeled on the same machine.

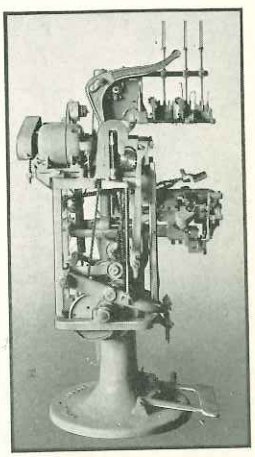
One of the many outstanding advantages of the World Automatic Rotary Labeler is that all parts are easily accessible. These machines are so well built that many of them are now in satisfactory operation after constant daily use over a period of many years. World Automatic Rotary Labeler positively reduces labeling costs to the minimum.



All machines are equipped with the Alemite Push Type High Pressure Lubricating System.

General specifications:—Motor, 1 H.P. Floor space occupied, 4 ft. x 12 ft. Height, 6 ft. Conveyor, 12 ft. overall. Shipping weight machine, 2200 lbs. Standard conveyor, 900 lbs.

IMPROVED WORLD LABELER



The *Improved World Labeler* is a most efficient and economical semi-automatic machine. It can be equipped to label small vials, one gallon bottles or jugs, or boxes and packages of various shapes and sizes. It is very generally used for applying *body and neck labels and foil in one operation*, to all types of beverage bottles. A positive *center* gumming device can be furnished when required. It applies labels all around a bottle or jar and is practically a universal labeling machine.

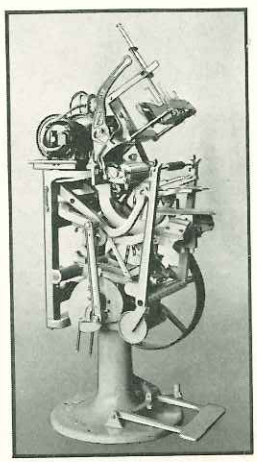
The *Model S Improved* machine has many new and exclusive mechanical features, recently developed. Among these improvements are the *silent* adjustable motor drive, the roller chain with cut sprockets for driving the gum roll, the redesigned follower lips which check the upward pressure of the labels when the pickers are in contact, swinging label follower rod enabling the operator to easily place the labels in the holder, quickly removable transfer roll and an improved type of gum box.

All machines are equipped with the Alemite Push Type High Pressure Lubricating System.

Roller truck, to make the machine readily portable, supplied at small extra cost.

General specifications:—Motor, ½ H.P. Floor space occupied, 3½ x 3½ ft. Height, 5½ ft. Shipping weight, 950 lbs.

JUNIOR WORLD LABELER



The *Junior World Labeler* is a hand-fed machine designed for labeling where *body labels only* are applied.

It satisfactorily labels bottles from one ounce to one quart capacity. Even in small plants where it is used as a part-time equipment it reduces labeling costs over hand labeling and does a neater, smoother job. The machine is so simple that practically no experience is required to operate it and, with proper care, it will last for years.

All machines are equipped with the Alemite Push Type High Pressure Lubricating System.

Roller truck, to make the machine readily portable, supplied at small extra cost.

General specifications:—Motor, ¼ H.P. Floor space required, 3 ft. x 3 ft. Height, 4½ ft. Shipping weight, 650 lbs.

for SEALS of DISTINCTION

SUR OFF CAP
TO REMOVE TAP SHARPLY OVER TOP EDGE CRUSHING WAVE BEAD AND UNSCREW
EASY TO REMOVE
EMPIRE METAL CAP CO BROOKLYN N.Y.

"The tightest on; The quickest off."

are

SUR-OFF Patented Screw Caps

SEAL a bottle or jar with an Empire Screw Cap . . . sell it . . . ship it . . . then open with a twist of the wrist . . . and find the product perfectly preserved.

Combine with this last word in mechanical perfection the ability of the metal cap to harmonize with the package it protects . . . and the explanation of its popularity is clear.

Add your judgment to that of hundreds of the largest packers of food and other bottled goods by adopting the SUR-OFF Screw cap as the seal of your product and thereby give it a

SEAL of DISTINCTION

Samples gladly sent upon request.

Empire Metal Cap Company

INCORPORATED

Metal Caps, Boxes *and Tin Specialties*

254-36th STREET, BUSH TERMINAL BUILDING 2

Brooklyn, New York

EDWARD ERMOLD COMPANY

Automatic Labeling Machines of Quality

Hudson, Gansevoort and Thirteenth Streets
New York City, U. S. A.

GREAT BRITAIN
Matthew Wylie & Co., Ltd.
London and Glasgow

CANADA
Freyseng Cork Co., Ltd.
Toronto and Montreal

AUSTRALIA
Geo. H. Dowsing,
Sydney

DENMARK, NORWAY, SWEDEN
Anton Petersen & Henius
Copenhagen

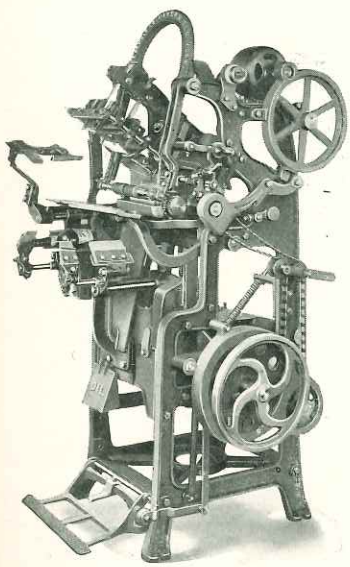
BRAZIL
Sander & Detuschmann
Rio de Janeiro

PARIS OFFICE AND PLANT: Société Française des Etiqueteuse Ermold—11 Place des Vosges, Paris, France

PRODUCTS:

Improved New Ermold Labeler—Simplex Single Labeler—Single and Double Semi-Automatic Labeling Units and Automatic Multiple Labelers.

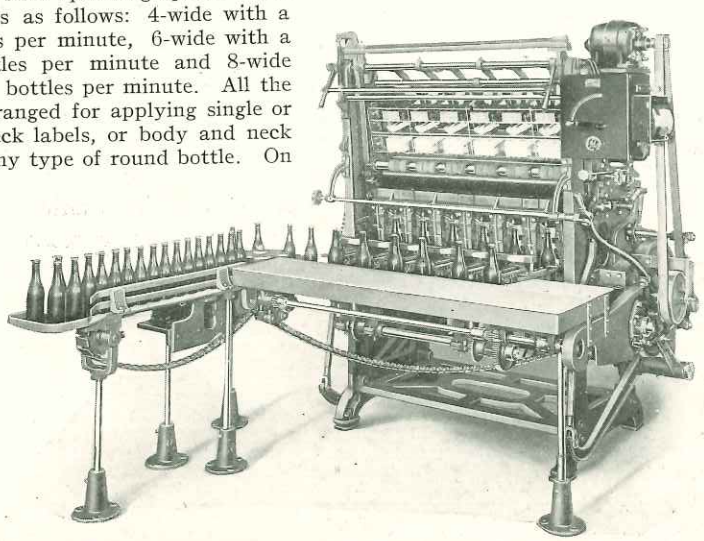
IMPROVED NEW ERMOLD LABELER:



This machine is today one of the most popular and widely used machines of our line. It is capable of applying one, two or three labels at one operation to any face of the package or bottle, and it can also be arranged to apply body and shoulder labels and tin foil to Ginger Ale Bottles. Its wide adjustability enables us to apply a label of a size from $^{3}/_{4}$" long up to one $10^{1}/_{4}$" long, either part way or all the way around a container. Due to its perfect balance of working parts and rigid construction the machine takes but a ¼ H. P. motor for its operation, and an output of from 30 to 45 packages per minute can be obtained according to the size and type of container. Containers of from 50 drops to one gallon capacity is the range of this machine.

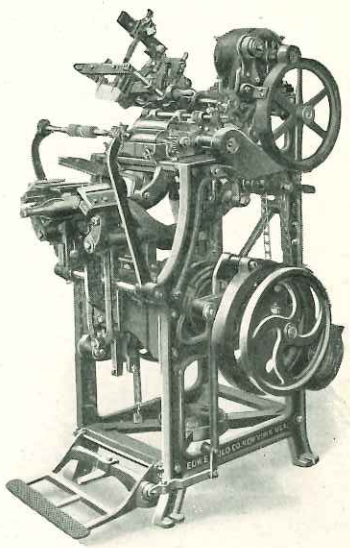
AUTOMATIC MULTIPLE LABELERS:

These machines are the very latest type of Automatic Machines built and have absolutely no equal, as the machines are capable of high capacity at very slow operating speed. The machines are made in three sizes as follows: 4-wide with a guaranteed capacity of 80 bottles per minute, 6-wide with a guaranteed capacity of 120 bottles per minute and 8-wide with a guaranteed capacity of 160 bottles per minute. All the three sizes of machines can be arranged for applying single or body labels only, or body and neck labels, or body and neck labels and tin foil to practically any type of round bottle. On these machines will be found another exclusive Ermold feature, the automatic cutout clutch, which instantly operates to bring the machine to a stop when any undue strain is brought on the moving parts due to a defective bottle, thus eliminating excessive breakage to both the bottles and machine. Either of the three size machines make but 20 revolutions per minute to give their high capacities and a speed controller is furnished with each machine so that the speed can be varied whenever desired.



SIMPLEX SINGLE LABELER:

This machine is similar in design to our Improved New Ermold Type, but was built for use in small plants or as an auxiliary in larger plants and is limited to a label up to 5" in height and half way around a container. This machine, unlike others of its size, has a capacity up to 45 packages per minute and is built along the same rigid lines as our larger type machine and also uses a ¼ H. P. motor in its operation. It handles single labels on either flat or round packages.



SINGLE AND DOUBLE SEMI-AUTOMATIC LABELING UNITS:

These units consist of our Improved New Ermold Type Machine with an automatic discharge attachment, which is an exclusive Ermold feature, and a belt conveyor which is driven from the labeling machine on which a ½ H. P. motor is used. This unit will show an increase of 30 to 33% over a machine arranged for hand feed and hand discharge. It saves 50% of the operator's labor, inasmuch as the machine glues the label and places it on the packages and then discharges the package to the moving conveyor, thus enabling the operator to increase her speed and efficiency. The double unit consists of two of the Improved New Ermold Type Machines, both equipped with automatic discharge attachment and one conveyor and is used in most plants where there is a front and back label applied, the first machine on the line applies the front label, the package is discharged to the conveyor and carried to the second machine where the second label is applied and where the package is again discharged automatically to the conveyor and carried on to the packing table. As with the single Semi-Automatic Unit, the first machine has a ½ H. P. motor for its operation and the second machine has a ¼ H. P. motor for its operation.

J. L. FERGUSON COMPANY

JOLIET, ILLINOIS

ST. LOUIS NEW YORK LOS ANGELES

Manufacturers and Designers of Packaging Machinery

PRODUCTS:

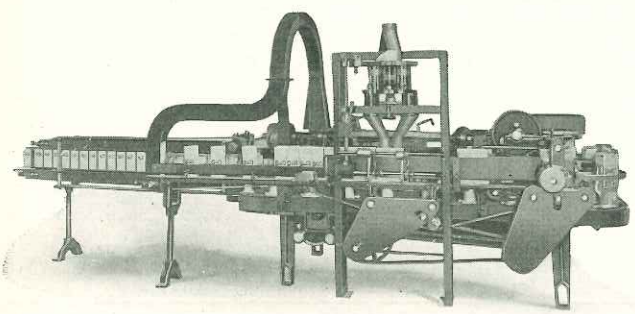
Carton Sealing Machines, Automatic Scales and Fillers, Carton Forming Machines, Automatic Case Packers, Container Sealing Machines, Labeling Machines, and Special Machinery for packaging purposes.

CARTON SEALING MACHINES:

The Ferguson Carton Sealing and Filling Machines were designed and developed for the packaging of food and other dry products in the most efficient and economical manner. Extensive investigation was first made as to the type of package that would offer the most advantages to both the packers and the consumers. Paper cartons properly proportioned and designed for sealing were generally acknowledged to be the most practical.

Ferguson machines were then made to meet the demand for automatic equipment that would embody all of the following outstanding features: simplicity in construction and operation, compact but all moving parts accessible, highest speed commensurate with accurate weights and tightly sealed cartons, adjustable for various size packages, and durability.

The Ferguson Carton Sealer is a combined top and bottom sealing unit, and is furnished with or without Automatic Carton Feeding device. It is also equipped with Volumetric Filler or Automatic Weighing unit, the

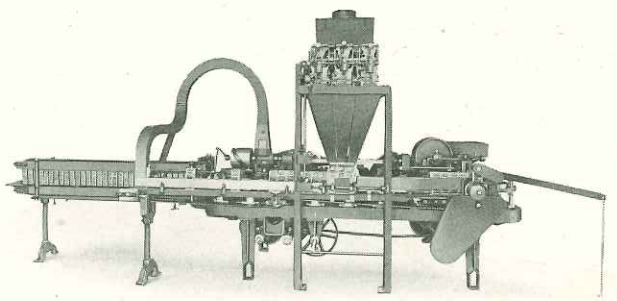


Left Side View of Ferguson Carton Sealing Machine with Volumetric Filler

latter of net or gross weight type, whichever is better suited for the product to be handled.

A production of sixty packages per minute can easily be obtained with a single unit, whether cartons are fed by hand or automatically. Commercially accurate weights and tightly sealed cartons are guaranteed.

Cartons are received in knocked down or flat form, squared and placed over partially hollow aluminum forms while in motion. As these forms then travel through the center of machine the top inner flaps are folded and the outer flaps opened, also spread with adhesive while passing under glue rolls. Immediately the outer flaps are folded and held under compression. By means of air produced with fan operated by a $^1/_4$ H. P.



Left Side View of the Ferguson Carton Sealing Machine with Automatic Net Weight Scales

high speed motor, the cartons sealed on one end are transferred through spout to opposite side of the sealer and conveyed under filler or scales.

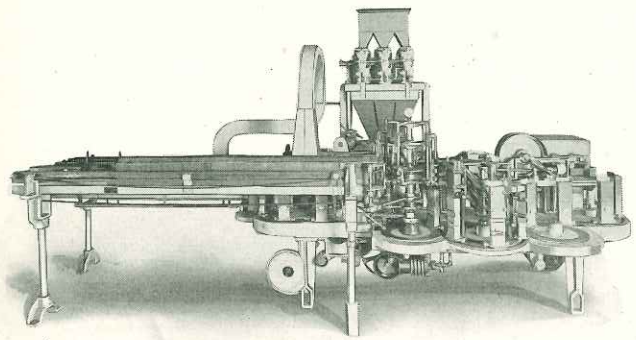
When filled, the cartons are automatically released and plunged onto stools, which carry them again through center of machine for sealing of flaps. At the rear of sealer the filled and sealed packages then enter compression belts and when discharged are ready for packing into shipping containers.

The Automatic Carton Feeding device is not a separate unit but is made a part of the carton sealing machine. Cartons in the knocked-down form are placed into the magazine which holds approximately fifteen hundred. One by one they are released, opened, and placed over the aluminum forms. The vacuum used in transferring the cartons from magazine to the rotating cages is supplied by means of pump operated directly from sealing machine. Specially constructed cartons are not required.

The Volumetric Filler is intended for free-flowing products, such as salt, soap powder, beans, popcorn, peas, etc., the specific gravity of which does not vary materially. This filler is easily and rapidly adjustable, and is so ingeniously designed that commercially accurate weights are guaranteed.

The filler has four rotating pockets, adjustable as to depth, and into which may be inserted measuring tubes for use when smaller packages are to be produced. While two of the rotating pockets are in the process of filling, the other two are discharging.

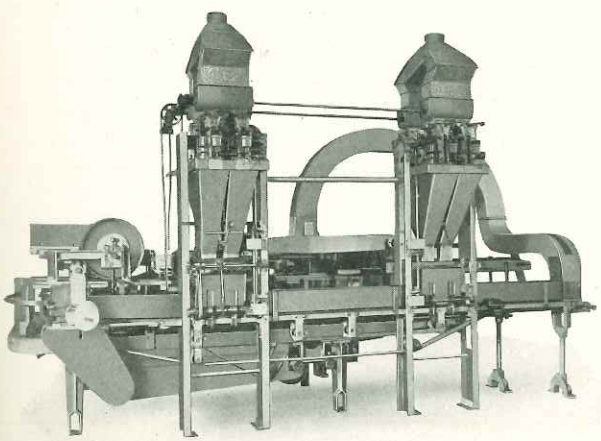
For the packaging of semi-free flowing products the Ferguson Net Weight Scales are used in connection with the Carton Sealer. These scales are furnished in from



Ferguson Carton Sealing Machine with Automatic Carton Feed and Net Weight Scales

four to eight units, making it possible to fill as many cartons at one dump, and allowing enough time to warrant accuracy in weights. Such products as coffee, bird seed, grass seed, cereals, etc., are handled very successfully with this equipment.

Two sets of weighing units as illustrated are also furnished with a single Carton Machine, making it possible to partially fill two or more cartons, then insert a pre-

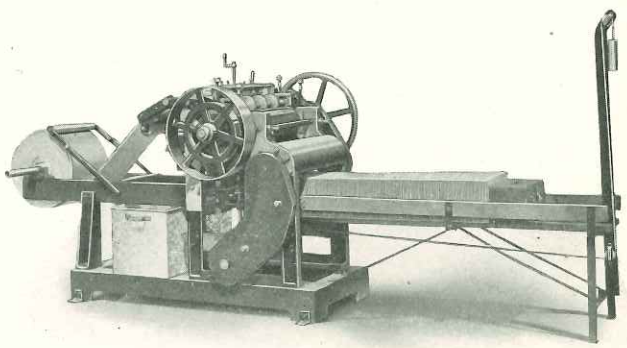


Right Side View of Carton Sealing Machine with Two Sets of Automatic Scales

mium, and finish filling at the second weigher. This type unit is generally used by packers of cereals, when it is desired to insert such premiums as chinaware, aluminum utensils, etc. All Ferguson Automatic Weighers permit the product to flow only when cartons are in proper place.

Automatic Gross Weight Scales are also manufactured and furnished with Ferguson Carton Sealers, and are recommended for the handling of such products as flour, where constant agitation is necessary. Three bulk and three dribble scales are used, therefore three cartons are always in the process of being filled. Same as when net weight type scales are used, a shaking device is made a part of the equipment so that product settles below score lines before top flaps of cartons are sealed.

A complete top and bottom sealer, with weighing unit or filler, requires floor space of only $4^1/_2'$ wide and $16^1/_2'$ long. From one to two-H.P. motors are sufficient for driving and are furnished with machines. When more than one size of cartons are to be handled, extra parts are furnished to suit. But little time is required to change from one size to another.



Right Rear View of Ferguson Carton Forming Machine

CARTON FORMING MACHINE:

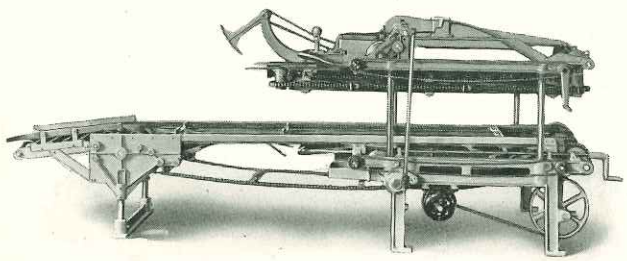
To the packer of tight-wrapped packages the Ferguson Carton Forming or Shell Making Machine offers a great saving. It is possible to obtain the chip board in any quality and size rolls wanted and manufacture shells on a tonnage basis. Thus the need of storing in large quantities, as well as the loss in damaged shells, is entirely eliminated. The operation of the machine is very simple. The chip board is fed from the roll, the edges trimmed, cut, scored, folded and side seam glued. The shells are then delivered in a knocked-down form. And to do this all, only one operator is required. Anywhere from 125 to 200 shells per minute can be produced with one unit. A three-horsepower drive motor is used. The machine requires floor space of $4^1/_2'$ wide and $14'$ long.

CONTAINER SEALING MACHINES:

Ferguson Container Sealing Machines are built in full automatic, semi-automatic, and hand glue models. These machines are for sealing the top and bottom flaps of paper shipping containers and are exceptionally practical in design and construction.

The full automatic sealer is equipped with a positive power-feeding device, which times the filled cases from

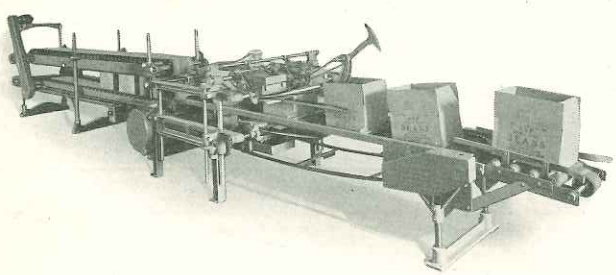
conveyor. As they travel through, the bottom outer flaps are opened, the top inner flaps are closed, adhesive is spread onto both top and bottom outer flaps at same time, the flaps then folded, and cases discharged into compression unit. When inner flaps of containers do not meet, the glue may be spread only where flaps contact. This is effected by means of an easily adjustable skipping device. An automatic safety device is also furnished as regular equipment.



The Ferguson Automatic Container Sealer without Dryer, Model "D"

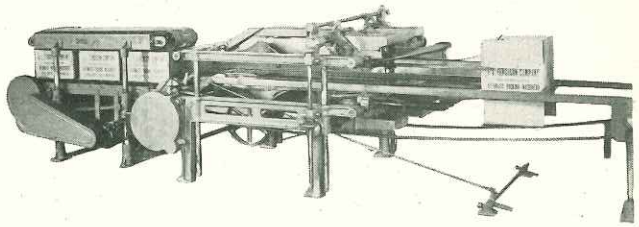
The dryer or compression unit is equipped with automatic start and stop control and operates intermittently allowing maximum length of time for cases to remain under pressure. An outstanding feature is that both top and bottom belts are driven. While the automatic gluer will operate successfully at any speed up to 2000 or more cases per hour, the length of the compression must be proportionate. The six-foot dryer is capable of a production of about 200 tightly sealed cases per hour.

These machines are designed for unusual flexibility, and are rapidly adjustable for various size cases within reasonable range. To change from one size case to another requires only about three minutes' time. No regular operator is necessary. A complete unit requires floor space of only 4′ wide and $16\frac{1}{2}$′ long, unless longer than six-foot dryer is required for maximum demand.



The Ferguson Automatic Container Sealer, Model "D," with 16-ft. Dryer

The Ferguson Semi-Automatic Sealer is similar to the above, but is intended for smaller output or where a sealer is necessary at end of each line. The automatic

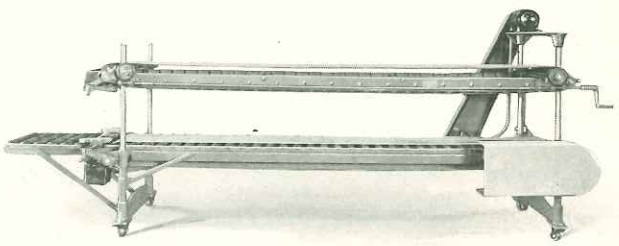


The Ferguson Semi-Automatic Container Sealer with 4-ft. Dryer, Model "G"

feed and bottom flap opener is eliminated and cases are packed on package plate at inlet end of the gluer. When filled, the operator starts machine by means of foot trip and while case travels through sealer another one can be in process of packing. The machine operates intermittently at will of packer. A four-foot dryer is regular equipment with this type gluer and will handle the output of one packer or up to 150 average size cases per hour.

The Ferguson Hand Glue and Portable Type Sealer is a compression unit only and with it the adhesive must be spread on flaps with hand brush. It is equipped with feed table, automatic start and stop control, etc. Furnished in any length necessary for a given output.

Ferguson full or semi-automatic sealers have $\frac{1}{2}$ H.P. drive motors as regular equipment. The compression units require motors of $\frac{1}{2}$ H.P. or more, depending on length.



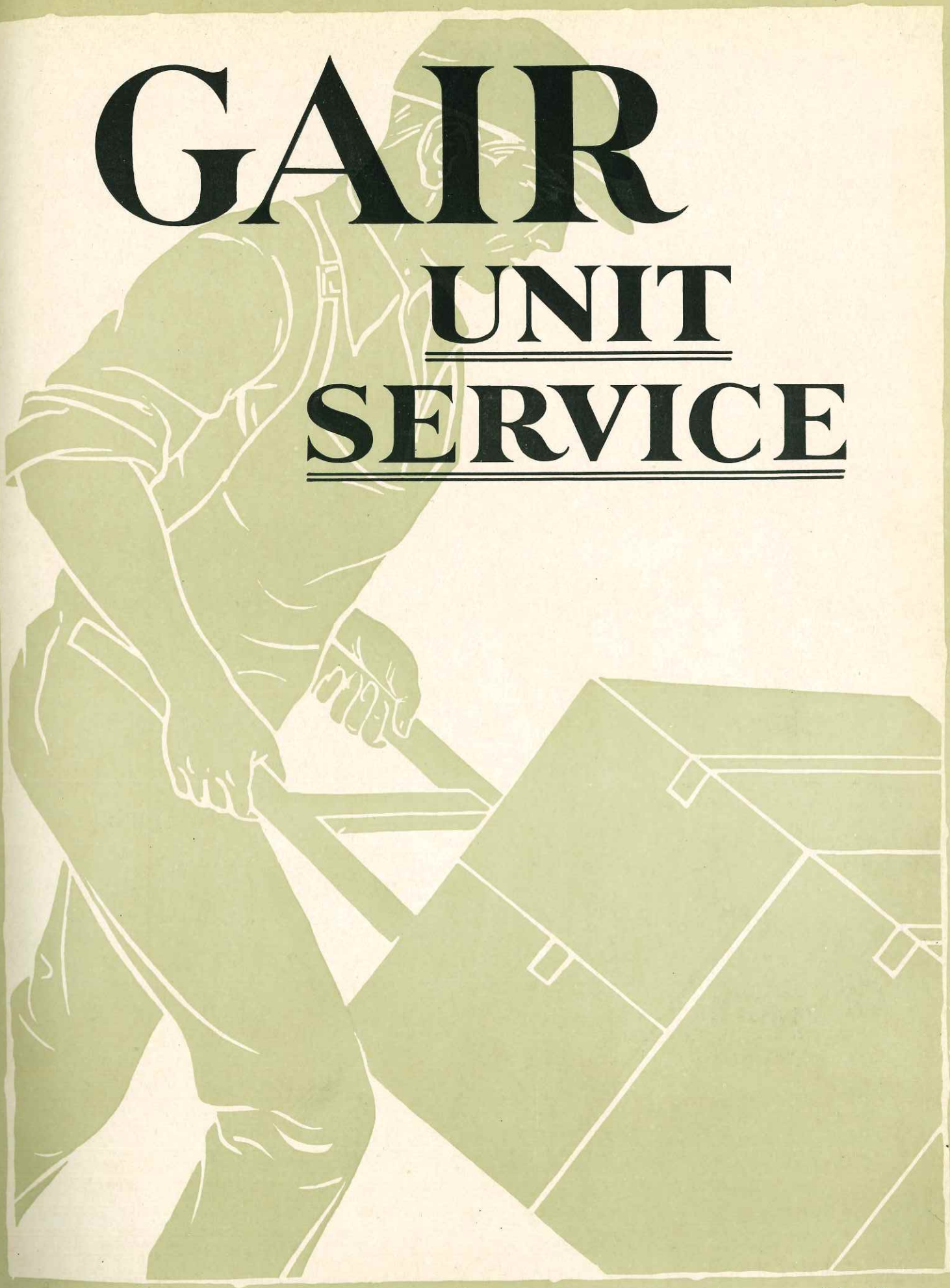
Ferguson Container Sealer, Hand Glue and Portable Type

SPECIAL MACHINERY AND EQUIPMENT FOR PACKING-ROOMS:

Labeling Machines for paper cans
Paper Cover Shrinking Machines
Automatic Capping Machines
Rolled Oats Compressors and Fillers
Macaroni Drying Cabinets
Tube Gluing Machines
Dies for Punch Presses, etc.

Details of above equipment will gladly be given upon request. Also, Ferguson engineers will consult with you regarding any special packaging problems you may have.

GAIR
UNIT SERVICE



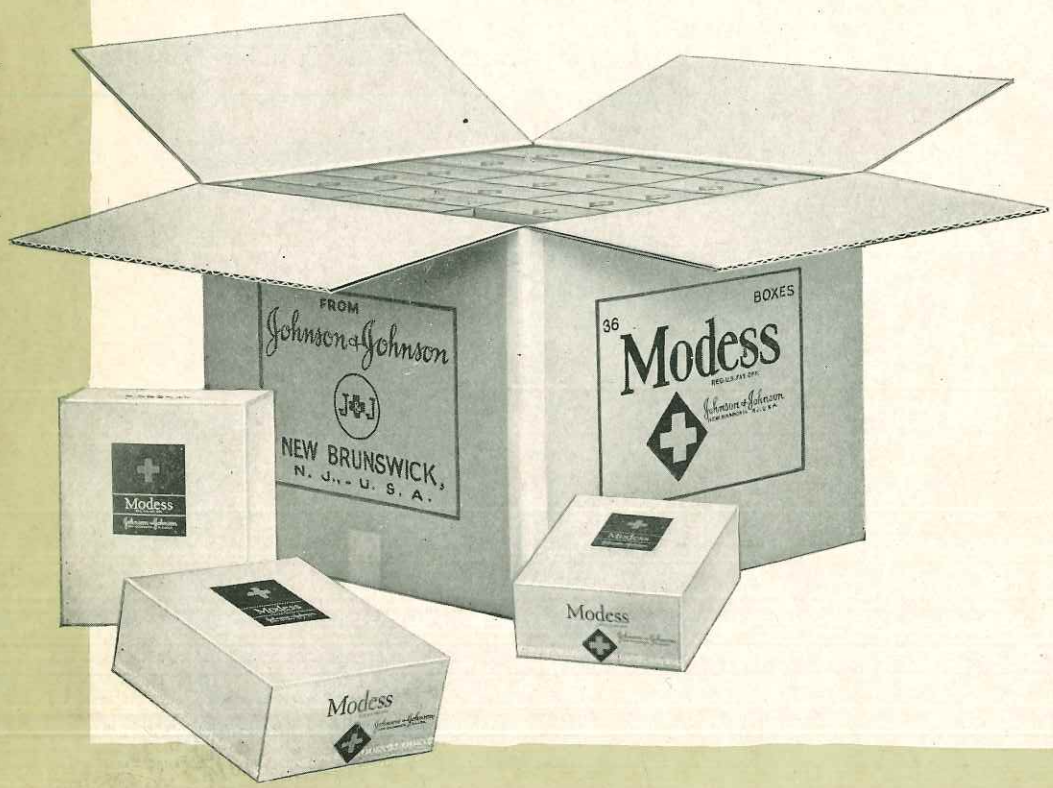
Able tie-ups for your Merchandising

Everyman's Secret— But Few Know How

AN official of this company seated in a suburban express a few days ago was approached by a friend who casually showed him an invention. It was a convenience for men. As if by magic, it produced shaving lather in exuberant abundance. To the onlookers, the bristle brush seemed doomed to wither before this foam-making device, just as the treacherous blade of the old-fashioned razor enfolded itself forever in its horn handle before the triumphant Safety.

"But how can I place this before the Public," said the inventor. "How can I promote its sale?" When you build a house, you want an architect and a decorator to plan and beautify it. Do you know that there are architects, artists and creative thinkers who devise merchandising plans, taking into account market hindrances and reckoning every sales advantage, bent on getting results? Nothing haphazard and nothing is left to chance. Give me your invention and in a day or two our Creative and Design Department will have it cloaked in a Folding Carton. A Carton will be built around it—it will be adapted to it and will become a part of it, giving it character and form. It will be designed in appropriate, cool colors. A dozen will be placed in a harmonious Display Container, one that will get place by right of appearance. It won't be skyed like doubtful art or put under the counter. The Folding Cartons placed within the Display Containers ready for the retailer are packed within a Corrugated Shipping Case, the whole constituting a Merchandising Unit. The Carton, the Display Container and the Corrugated Case complement each other and comprise a harmonious whole in color and design.

This is the definition of Gair Unit Service.



THE ingenuity of the personnel of our Creative and Design Department is inherent, but its ability is the heritage of sixty-four years of experience. Mr. Edward Tinsley has been busy with Folding Carton structure since geometry days. Mr. J. D. Malcolmson is an authority on Corrugated and Fibre Cases. He is a former fellow of Mellon Institute of Industrial Research. And Mr. John Martin, Director of Art, has spread his effects upon successful merchandise the world over. These heads of our Creative and Design Division are happy to give advice when new marketings are undertaken or when venerable forms or designs are to be rescued from obsolescence.

The other day, an editorial in the New York Times announced: "New York Public Library Officials have concluded that the public prefers its reading matter in brightly colored covers. Some thirty bright, new colors have been adopted.

"In the experimental work of one of the libraries, a large group of old books, long neglected by readers were re-bound in bright purple. Returned to their old places on the shelves, they were quickly spied out, borrowed and kept in constant circulation.

"This seems like a sound merchandising scheme."

We have record of many psychological tests, scientifically made, to determine what propulsion the public mind gets to possess and to buy. Such experience and knowledge make the expert and time ripens his judgment. It is this seasoned judgment and the wealth of ideas that long practice has brought that we place at your disposal.

Look to your Carton—it may need rejuvenation to get wider and more active circulation for your goods.

WE made the first Folding Carton back in the days when the Cracker Barrel was the seat of the General Store philosopher. Those were the "days of real sport." The mice steeplechased through the cereal and sugar bins and the cat's intermissions between pursuit were spent in repose on the coffee bag, while worm and germ lived in harmony together. Those were the grand old unstandardized days. The clerk pulled down a flat paper cornucopia and blew a mighty blast therein to make it receptive of the contents of the scope of his doubtful scale.

Not one hundred thousand dollars in merchandise was annually distributed in Folding Cartons in the Sixties. It is tentatively estimated that today we annually manufacture Folding Cartons, Display Containers, Corrugated and Solid Fibre Shipping Cases, also Box Boards for conversion into merchandising receptacles, that combined carry three billion dollars' worth of goods.

The malodorous and shadowy store of merchandise has grown into a splendid system of standardized shops. Trade-mark goods—correct to the fraction of an ounce, brilliantly vying for public notice and vast in the selective opportunity they afford the purchaser—came with the increasing use of the Folding Carton. Does this not make it necessary to call in the best talent, get practical help and scientific conclusion before buying new or reforming old Folding Carton designs?

We manufacture from the ground up. Our paper machines produce over twelve hundred tons of box board daily.

We engrave, print and lithograph in the largest and best equipped plant of its kind in the world.

Gair products flow uninterruptedly from the box board machines through all the processes to the shipping floor with studied economy.

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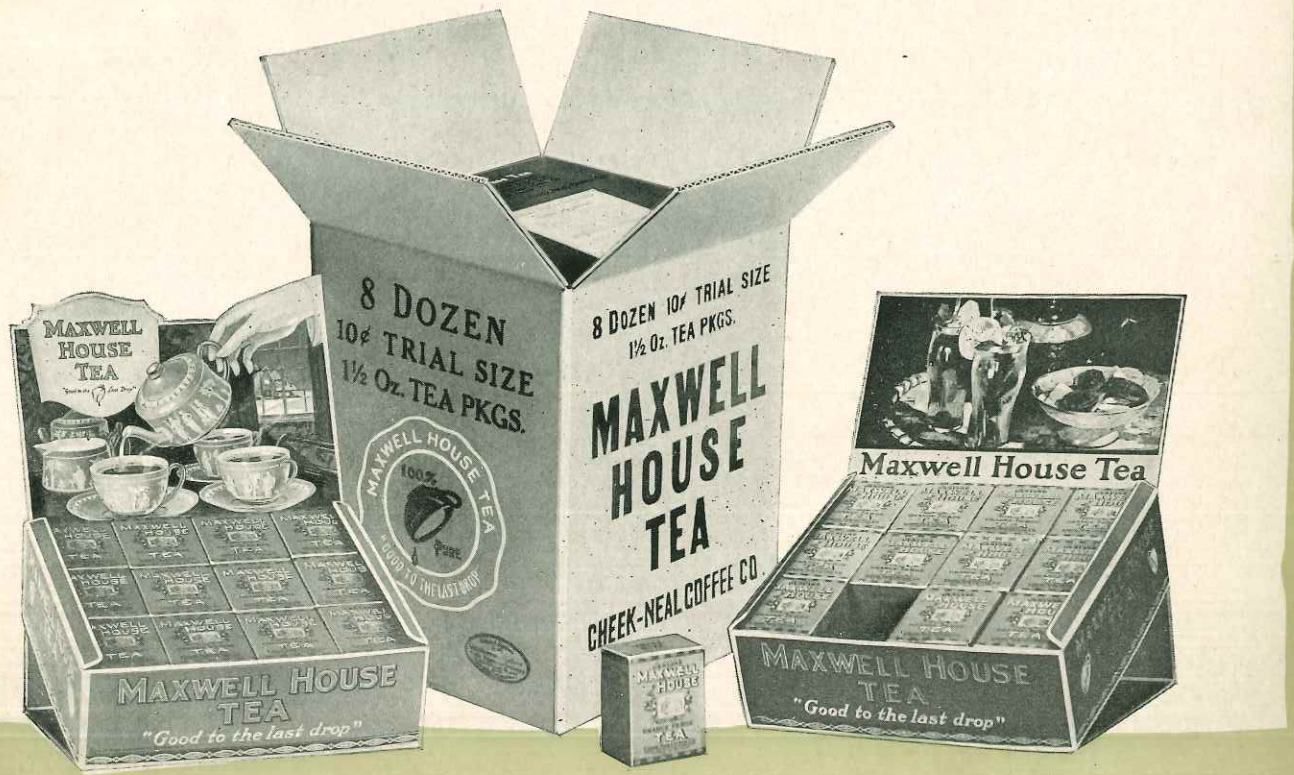
BOSTON, MASS. BROOKLYN, N. Y. SHELTON, CONN.


MAXWELL HOUSE TEA
8 DOZEN 10¢ TRIAL SIZE 1½ Oz. TEA PKGS.
MAXWELL HOUSE TEA
CHEEK-NEAL COFFEE CO.
8 DOZEN 10¢ TRIAL SIZE 1½ Oz. TEA PKGS.
Maxwell House Tea
MAXWELL HOUSE TEA "Good to the last drop"
MAXWELL HOUSE TEA "Good to the last drop"

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LABELS ··· BANDS ··· WRAPS ··· CIRCULARS

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CONSIDER the care, thought and money that you have expended to give your product that priceless ingredient of all quality merchandise — INDIVIDUALITY. ¶ Can you afford to do less for your package that bears the brunt of evoking the first sales contact. ¶ Foxon's ability to produce labels, wraps, bands, box tops, etc., is unquestioned, for Foxon clients are legion. ¶ If yours is a package decoration problem, consult Foxon. A complete art department for redesigning your old label or creating a new one is at your disposal. Also keen merchandising men who can guide you safely to the port of package success. ¶ Affiliated with Foxon is the Advertisers Engraving Company, creators of fine printing plates. Your entire problem of labels, bands, circulars, plates and engravings can now be assumed with full responsibility by one organization. Your package problem—your advertising problem solved now with dispatch and efficiency. ¶ Write for further details of our combined service and ask for additional samples of workmanship.

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Glue
Sour Cream
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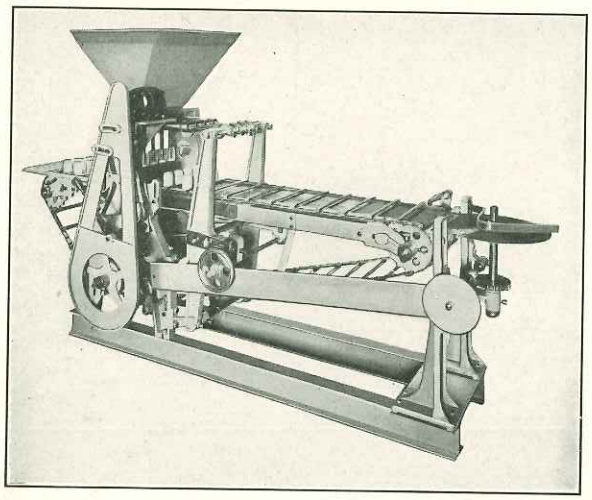
Etc., Etc.



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Brighten Roll Leaf in Imitation Gold and Silver as well as Metallic and Pigment Colors.

Brighten Roll Leaf Feeder, in One, Two and Three Draw Models.

Brighten Roll Leaf Cutting Machines.
Brighten Roll Leaf Thermostatic Heat Controllers.
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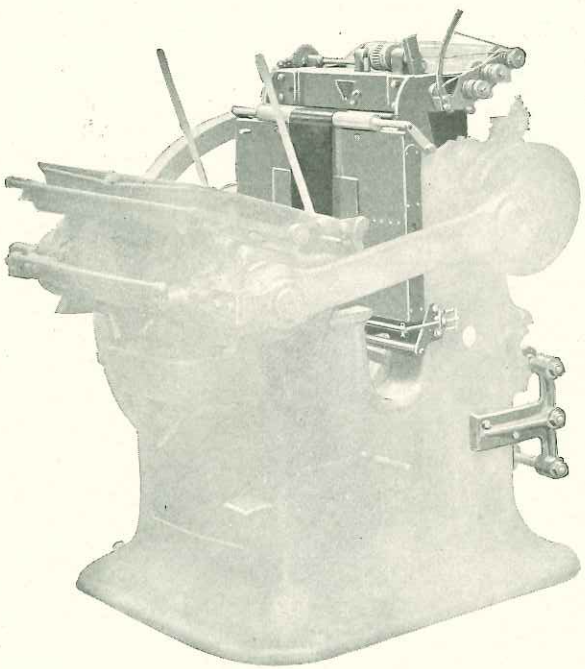
Brighten Roll Leaf Feeders in single or multiple feed self contained units for Colt's Armory or Universal type printing presses. This equipment enables you to stamp and emboss in one operation with BRIGHTEN ROLL LEAF at practically the same ease and speed as ordinary printing.



Brighten Roll Leaf Feeder for Colt's Armory or Universal Type Press

BRIGHTEN ROLL LEAF FEEDERS:

THREE DRAW FEED MODEL has a maximum pull of 12 inches and will feed strips of leaf up to 15 inches wide, price $650.

TWO DRAW FEED MODEL has same specifications, price $600.

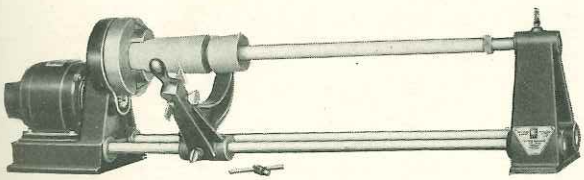
ONE DRAW FEED, three models:

JUNIOR MODEL has a maximum pull of 8 inches and will feed strips up to 10 inches wide, price $150.

STANDARD MODEL has a maximum pull of 12 inches and will feed strips up to 12½ inches wide, price $225.

SENIOR MODEL has a maximum pull of 12 inches and will feed strips up to 15½ inches, price $250.

All the above are self-contained units driven by a 1/10th horse power motor. Each feed roller is operated independently and the adjustment length of pull is from zero to capacity as designated.



Brighten Leaf Cutting Machine

BRIGHTEN ROLL LEAF CUTTING MACHINES:

Self-contained units driven by a 1/10th horse power motor for cutting Master Rolls of leaf into any desired width. Supplied ready to be plugged into any light socket.

BRIGHTEN ROLL LEAF:

Supplied in imitation gold and silver, Metallic and Pigmented colors. Sold in Master Rolls 24 in. wide by 100 to 600 feet in length or cut to any desired width. For stamping all grades of paper, artificial leather, celluloid, book cloth, silk, satins, velvet, plain and lacquered wood surfaces and numerous other materials.

ELECTRIC THERMOSTATIC HEAT CONTROLLER:

A device for regulating thermostatically the electrical heat of your stamping presses, which makes each stamping machine "mind its own temperature."

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DUREZ CLOSURES

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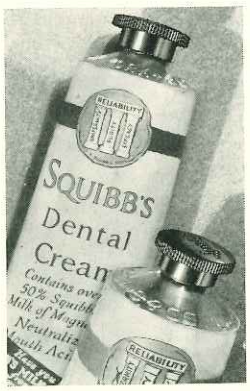
New York: 250 Park Avenue
Chicago: 9 So. Clinton St.
Los Angeles San Francisco

DUREZ

Gaston E. Marbaix
Adelaide House, King William St.
London, E. C. 4, England

LIMITATIONS OF THE AVERAGE CLOSURES:

The limitations of the average closures are well known to the manufacturer who uses them. There is difficulty in accurate threading; the cap binds on resealing; destructive agents may affect the inside of the seal; colors are restricted; and production machinery is frequently expensive. Because of these defects, many manufacturers have turned to Durez molded closures for capping collapsible tubes, bottles, jars, and boxes, for display cases, vanity sets, powder boxes—in fact, for virtually every type of container.



DUREZ MOLDING COMPOUND:

Durez molding compound is a synthetic phenol condensation product to which various filling materials—chiefly wood flour and asbestos—are added for strength, appearance, and molding qualities. Durez is molded or formed under heat and pressure, the manufacturers supplying material in a powdered form to those equipped to make it into finished closures.

MECHANICAL AND PHYSICAL ADVANTAGES OF DUREZ CLOSURES:

Durez closures are strong, tough, and hard, yet light in weight. They are not affected by acids, alkalines or other destructive agents, making cork inserts unnecessary. They do not rust or corrode in contact with certain pharmaceutical products. Nor do they discolor the contents of the container. One of the outstanding advantages in connection with collapsible tubes is the fact that Durez closures do not leak, nor permit the contents to cake in the mouth of the tube.

THREADING:

Durez closures are easily gripped, and screw down unusually tight. Yet they are readily released, and will not bind. The answer lies in the threading. Durez threads are stronger than alloy metals because they are molded, not cut. Any size, or kind, of thread may be used—whether inside or outside, fine or bayonet. Accuracy is assured within accepted commercial limits, and uniformity established whether you make ten or a million closures.

BEAUTIFUL FINISH AND COLORS:

The lustrous surface of Durez is a permanent natural finish that requires no polishing, buffing, or tooling. Many manufacturers, awake to the popular appeal of color, have definitely abandoned ordinary brown or black caps, and use colors exclusively. Durez is available in black, browns, reds, maroon, terra cotta, blues, greens, gray, orange, mahogany and walnut. Special colors can be produced to order by competent molders, by the blending of standard colors to secure a wide range of mottled and striated effects.

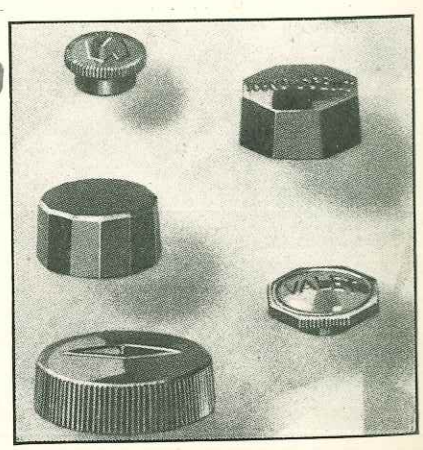
SOME NATIONALLY KNOWN USERS OF DUREZ CLOSURES:

The concerns which have adopted Durez molded closures are numbered among the largest organizations in the pharmaceutical and perfumery industries. They include E. R. Squibb & Sons, Auto-Strop Razor, Johnson & Johnson, Pinaud, Palmolive, Parke-Davis, Orphos, Pond, Barbasol, Fitch, Noonan, Astringosol, Zonite, Pen-a-tox, Aywon, Lambert Pharmacal Company, Nelson Baker & Company, and many others.

ADAPTING DUREZ TO YOUR USE:

Those who wish to investigate the possibilities of Durez will find the research facilities of the General Plastics Laboratory of great practical value. A staff of specialists stands ready to show you how Durez will improve your closure from standpoints of beauty, efficiency and salability.

DUREZ



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FIRST MILL TO PRODUCE GREASEPROOF PAPER IN AMERICA

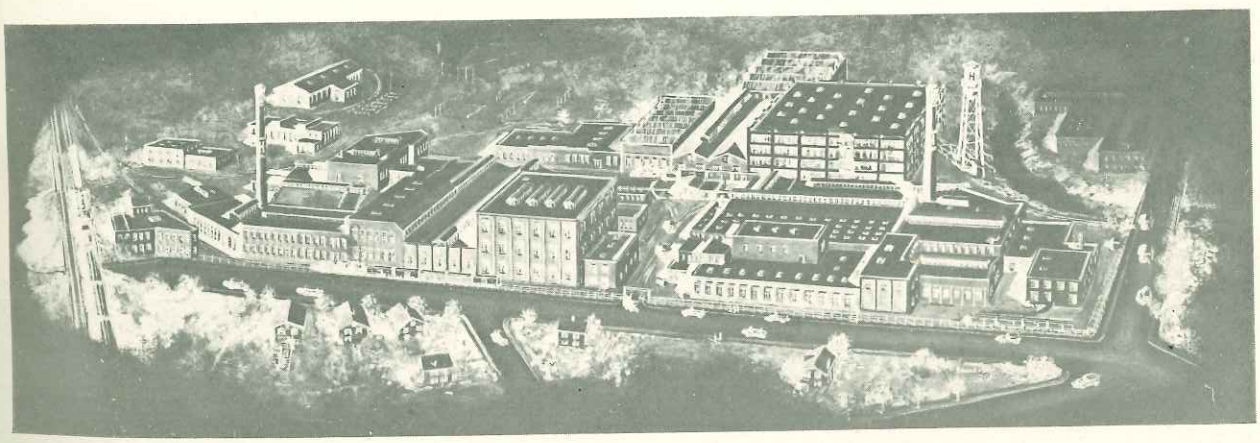
HAMMER-PARCHMENT —Originated and introduced by us in this country in 1900, and still the finest greaseproof paper obtainable.
Unequaled for box lining and wrapping of food stuffs that are greasy.
Waxed—Unwaxed—Bleached—Unbleached—Manila—Amber.
Sheets—Rolls—Circles—Special Dye Cuts.
Printed Wraps for bacon, ham, ice cream, etc.

HAMMERCLEAR —Most transparent of all waxed carton sealing papers.
Hammerclear is sanitary and odorless.
Properly sealed, it is proof against sifting, vermin, and acts against temperature fluctuations as an insulator—protecting the contents of your package.
Is light in weight, has pliability and strength.
Seals easily and stays sealed.

HAMMERGLASS (Waxed) —The most practical wrap for baked goods and other wrapping uses.
Has high grease resistance, pliability, strength and transparency.
Printed one, two and three colors, to order.

AMBER HAMMERGLASS (Waxed) —Carton lining for biscuits, crackers, spaghetti, meats, etc.

MANIFOLD PARCHMENT—Strong and transparent, being used in manifold sales book.
Can be had in natural, bleached and unbleached grades.
Lays flat—no cockles or curls.
Uniform in quality.



FROM RAW MATERIAL TO FINISHED PRODUCT

HORIX MANUFACTURING CO.

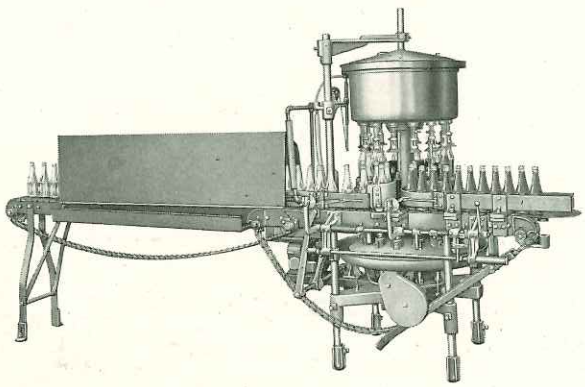
Corliss Station, Pittsburgh, Pa., U. S. A.

PRODUCTS: Machinery for Filling

Catsup, Chili Sauce, Soups, Fruit Juices, Syrups, Grape Juice, Wines, Vinegar, Waters, Still Beverages, Patent Medicines, Bluing, Oils, Polishes, Milk, Inks, and other Liquids.

Into bottles, cans, or jugs, or other containers, from one ounce to five gallons.

Improved "HALLER" ROTARY Fillers

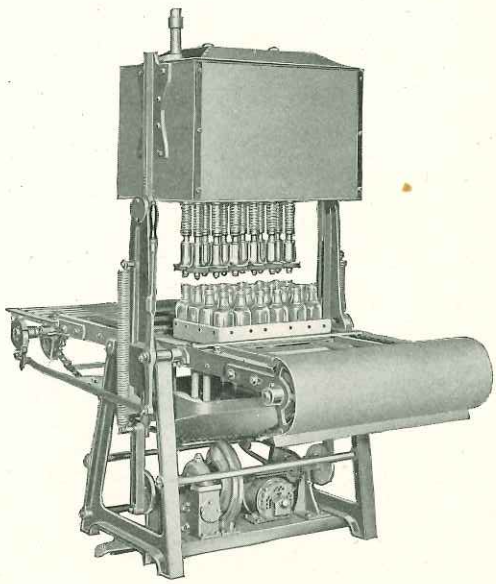


Model H. E. 14 tube (illustrated). New all-nickel sanitary tank with tight-fitted top removable for cleaning without tools. Provided with automatic stops in case of upset or defective container. Capacity: 70 to 90—14-oz. bottles per minute. Automatic, non-overflow tubes working solely by gravity. No experienced help needed for operation. Automatic discharge to any modern type crowning or closing machine, stopping filler if crowner is stopped.

The Model H. B. 18 tube (not shown) is similar to the Model H-E, but of greater capacity—from 96 to 120 per minute.

The Model H. S. 18 tube (not shown) for filling soups, saucing baked beans, spaghetti, etc., in tin cans. Capacity: 120 to 160 cans per minute depending on speed of double seamer.

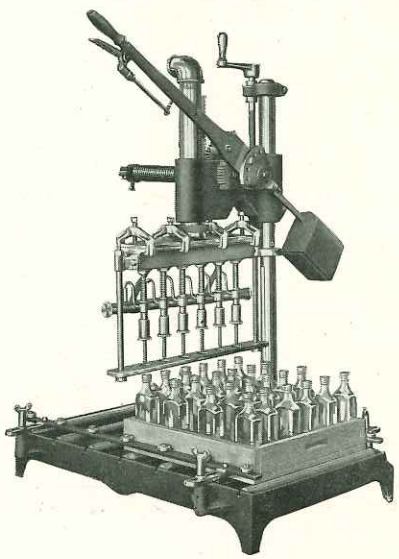
GANG Type Filling Machines



Six Tube Jug or Gallon Filler

For rapid intermittent filling. Made in several models for hand, electric, and hydraulic operation.

Bench Type Fillers

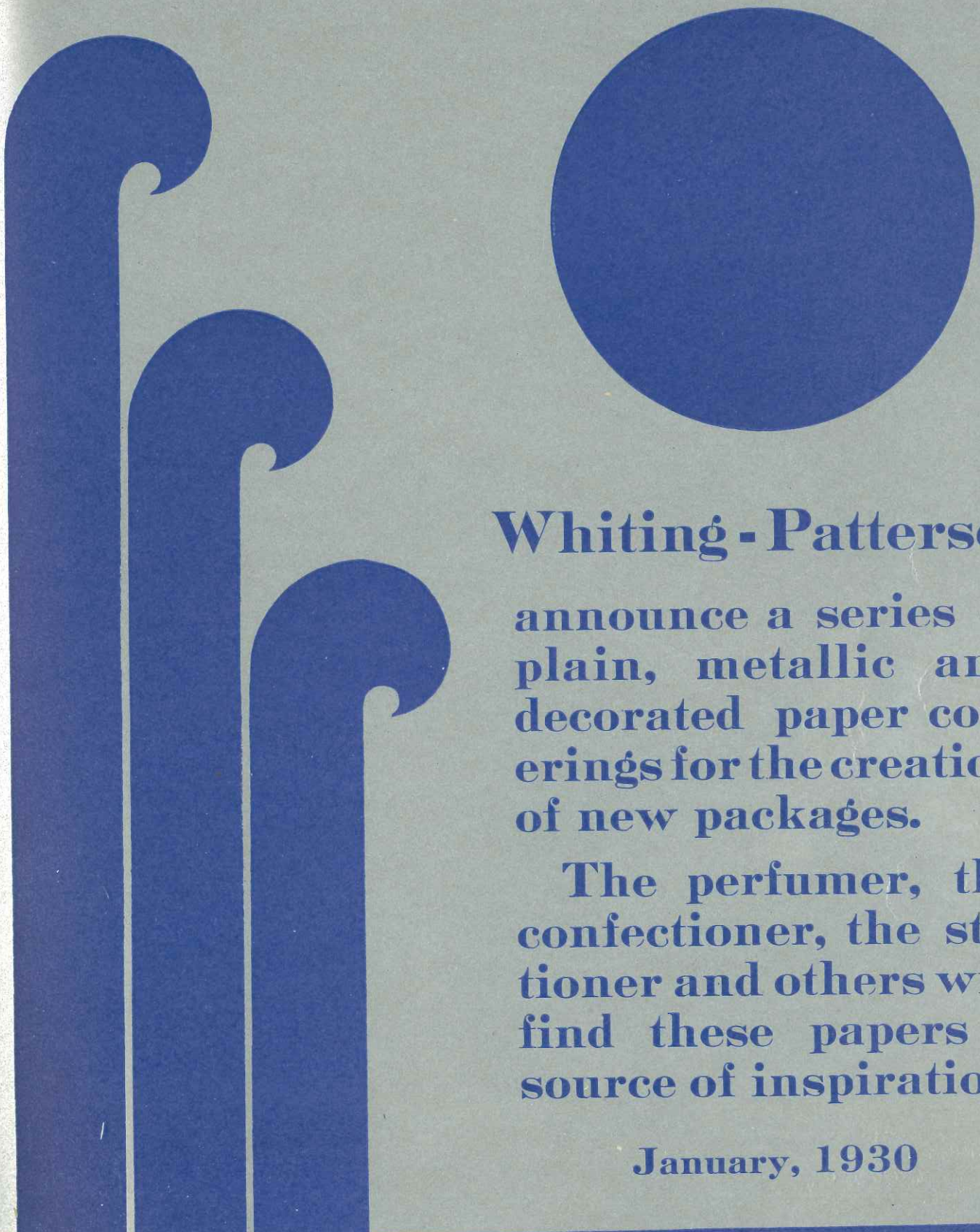


Model N Bench Type Filler

Model N is a hand operated machine designed for containers of small or irregular shapes and sizes, either glass or metal. Will fill containers of from one-half oz. to one quart capacity. Operates by depressing hand lever. Cannot overflow nor operate unless containers are in position. May be dismantled for cleaning without the use of tools. Tubes and tank may be had in metals best suited to the product to be handled.

Other types, not illustrated, built to suit requirements.

Horix "Haller" Fillers, the standard for the past 25 years—fully described in catalogs, mailed on request.



Whiting-Patterson

announce a series of plain, metallic and decorated paper coverings for the creation of new packages.

The perfumer, the confectioner, the stationer and others will find these papers a source of inspiration.

January, 1930

Catalogues and sample sheets of *Personality Papers* are available from

WHITING - PATTERSON COMPANY
INCORPORATED

386 FOURTH AVENUE, NEW YORK

CHICAGO
Springfield Glazed Paper Co.
308 West Washington Street

BOSTON
Whiting-Patterson Co., Inc.
1136 Statler Building
L. P. Cheever, Mgr.

SAN FRANCISCO
Walter J. Willoughby, Inc.
72 New Montgomery Street

SEATTLE
Walter J. Willoughby, Inc.
1219 North 20th Avenue

PHILADELPHIA
Whiting-Patterson Co., Inc.
320 North 13th Street

MINNEAPOLIS
The John Leslie Paper Co.
301 South Fifth Street

ST. PAUL
Nassau Paper Company
318 Wabasha Street

Paper Sales Ltd.
11 King Street, West
TORONTO 2, CANADA

(This is S W I Double Thickness)

JOHNSON AUTOMATIC SEALER COMPANY

(Subsidiary of Battle Creek Wrapping Machine Company)

BATTLE CREEK, MICH.

New York Office
30 Church Street

Chicago Office
228 No. LaSalle St.

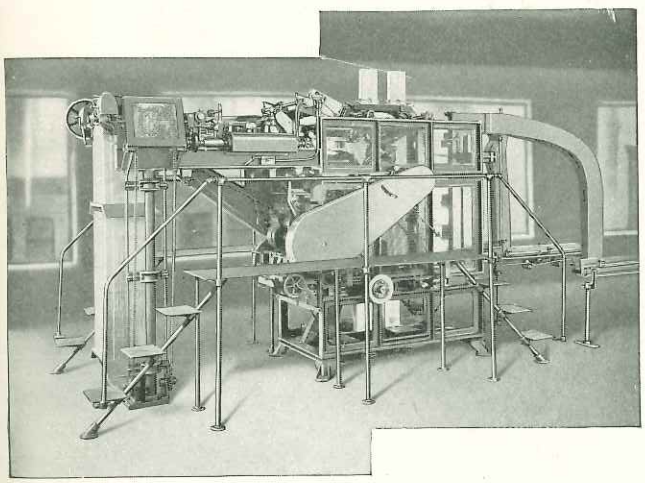
London Office
C. S. duMont, Windsor House
Victoria St., Westminster, S. W. 1

PRODUCTS:

Carton Sealing Machines (top or bottom sealers built as separate units or in one combination model)—Automatic Carton Feeders, either collapsed or flat carton type—Net Weight Scales—Gross Weight Scales—Volumetric Fillers—Carton Lining Machines—Wax or Glassine Wrapping Machines for plain or printed wrap.

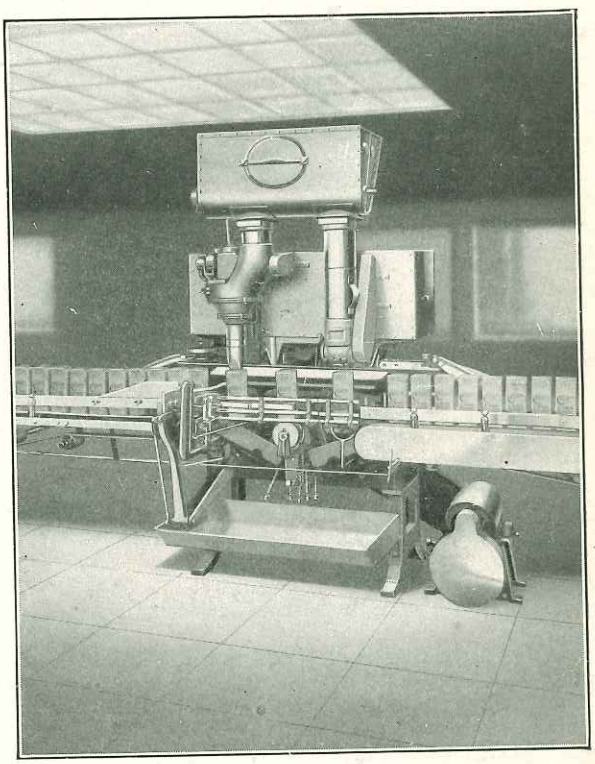
DUE to the fact that Johnson Packaging Machinery is of the continuous motion type and not subjected to the stresses and strains encountered by stop and start machines, depreciation from ordinary service wear and tear is greatly reduced. Wherever possible two or more operations are combined in one machine reducing necessary floor space to a minimum.

All machines are adjustable within a reasonable range for various sized packages. They are so designed, however, that when adjusted for a specified package they operate with all the efficiency of a single purpose machine.



Bottom Sealer (flat carton type) with automatic carton feed

Typical Johnson Machines



Gross Weight Scale for Flour

Each machine is a complete unit in itself for the operation desired and can be so furnished. Complete lines of two or more machines can be assembled in a layout suitable for the individual packer's requirements, constituting a complete automatic unit for performing every packaging operation from feeding, forming, lining, sealing, filling and weighing to wax wrapping the completed package at a speed of from thirty to seventy-five packages per minute.

Any packaging problem involving a production of sufficient volume to justify the necessary investment for automatic equipment can be solved by Johnson Machines.

FEED CARTONS & SEAL BOTTOM-LINE & FILL-WEIGH-SEAL TOP & WAX WRAP
Complete Economical Packaging - From Bulk to Shipping Container

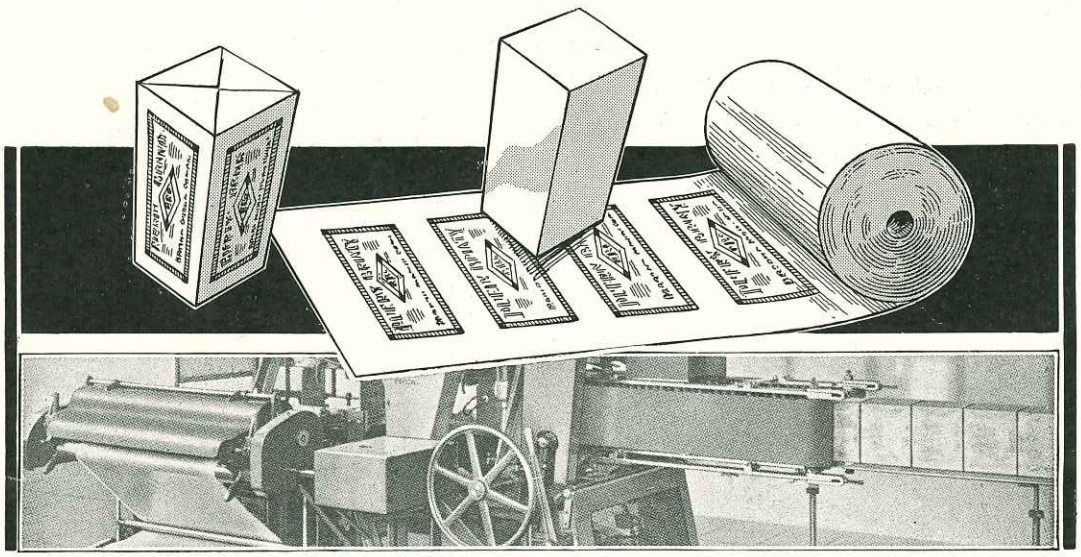
JOHNSON AUTOMATIC SEALER COMPANY

Of particular interest to the manufacturer of package products is the Johnson development of automatic wax wrapping as applied to cartons. The results obtained from wax wrapping cereals and other package foods do show that this protection does insure their reaching the consumer in a fresh, wholesome condition, the wax wrapping insulating the package against atmospheric changes.

size from a Cough Drop carton to large Biscuit caddies and Ice Cream Cone cartons, insures the opening of entirely new avenues of wax wrapping by the use of this printed wrap.

Johnson Weighers, either gross or net weight, weigh accurately and speedily.

Johnson Carton Sealers secure tight, square, sift-proof seals.



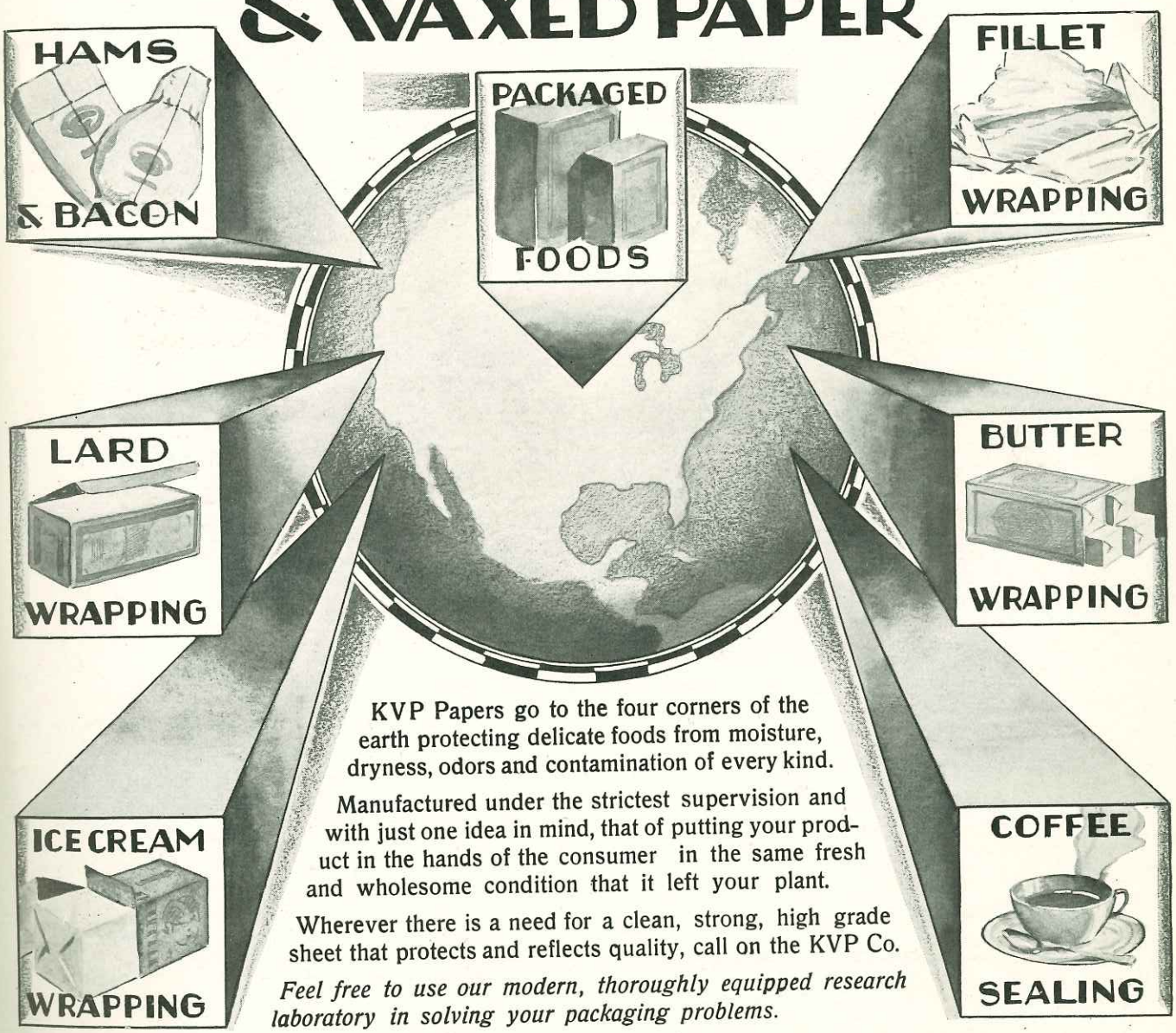
Realizing this fact, the Johnson Engineers have developed an entirely new and unique paper feed which enables a printed wax paper to be fed from a roll and the printed design to register accurately on the panels of the carton, thereby insuring not only maximum protection for the contents but also full display value to the advertising afforded by the printed design. The fact that Johnson wax wrappers can be furnished in four different models, wrapping packages ranging in

Johnson Wax Wrappers have always afforded a package the protection necessary to insure the contents reaching the consumer in as fresh and wholesome condition as when it left the manufacturers. Johnson Wax Wrappers for handling printed wraps not only furnish this protection but also give greatest display value to the package by means of the printed wax wrap.

Complete Economical Packaging - From Bulk to Shipping Container

KVP

GENUINE VEGETABLE PARCHMENT & WAXED PAPER



KVP Papers go to the four corners of the earth protecting delicate foods from moisture, dryness, odors and contamination of every kind.

Manufactured under the strictest supervision and with just one idea in mind, that of putting your product in the hands of the consumer in the same fresh and wholesome condition that it left your plant.

Wherever there is a need for a clean, strong, high grade sheet that protects and reflects quality, call on the KVP Co.

Feel free to use our modern, thoroughly equipped research laboratory in solving your packaging problems.

KALAMAZOO VEGETABLE PARCHMENT COMPANY
KALAMAZOO, MICHIGAN

THE KARL KIEFER MACHINE CO.

CINCINNATI, OHIO

Cable Address: *Kakimaco, Cincinnati*

Manufacturers of Filling and Packaging Equipment

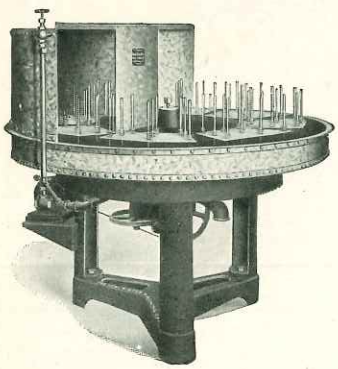
PRODUCTS AND SERVICES:

Filling Machines for liquid and semi-liquid products.
Jar and Bottle Rinsers.
Screw Cap Closing Machines.
Corking Machines.
Conveyors.
Filters.
Pumps.
Engineers for the planning and equipping of complete bottling and packaging plants.

VISCO FILLING MACHINE:

For preserves, jellies, jam, apple butter, mustard, salad dressing, honey, condensed milk. Also such products as: paint, varnish, salves and other materials filled in a semi-liquid state. Absolutely clean and accurate filling. Quickly adjusted for different sizes. Easily cleaned. Fills jars, cans, bottles and tumblers. Capacity: 30 to 50 containers a minute. We also make machines for mayonnaise, creams and products filled cold.

AUTOMATIC JAR AND BOTTLE RINSER:

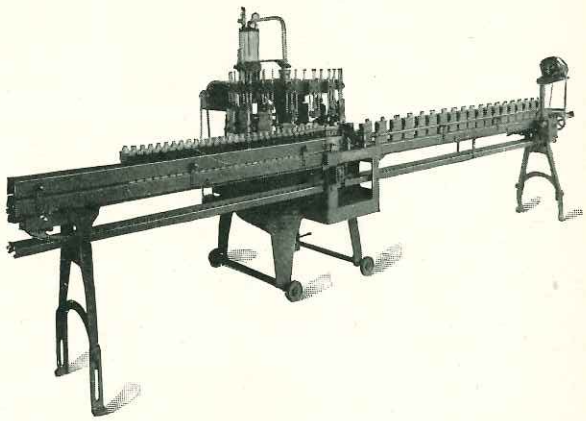


For cold or hot water rinsing, or hot water rinsing and steam sterilization. 40 to 100 bottles a minute. Hood and tank of heavy galvanized iron. Patented central water-distributing valve guaranteed never to leak. Motor, ¼ H.P. Other types of rinsers shown in our special booklet.

LIQUID FILLING MACHINES:

We make over twenty types and sizes of vacuum and pressure filling machines—automatic, semi-automatic and hand-operated; for practically all kinds of liquids and containers; for any production desired. Catalogs giving full information furnished on request.

AUTOMATIC ROTARY VACUUM FILLING MACHINE AND DISCHARGE CONVEYOR:



For filling light and heavy liquids of all kinds, such as medicines, tonics, emulsions, extracts, catsup, vinegar, syrups, etc.

Capacity: 40 to 140 bottles a minute. Clean, accurate filling without waste. Bad bottles automatically detected and skipped.

Made in four sizes: 8-tube; 12-tube; 18-tube; 24-tube.

BELT CONVEYORS AND PACKAGING TABLES:

Belt conveyors of any length with belts 4″, 6″, 7″, 8″, 10″, 12″, 18″, 24″ wide. Conveyors with belts 10″ or wider, are furnished with working tables if desired. Cooling belts for products filled hot.

FILTERS:

For clarifying medicines, extracts, syrups, vinegar, perfumes, fruit juices, oils and similar products. Fourteen types and sizes of filtermasse filters, paper sheet filters, cloth filters. Our catalog gives full details.

Special rotary and centrifugal pumps for use with filters, and for other purposes.

110A

FRENCH VELOUR

EXCLUSIVELY BY

KELLER-DORIAN PAPER COMPANY

INCORPORATED

110 FIFTH AVENUE – NEW YORK

110 B

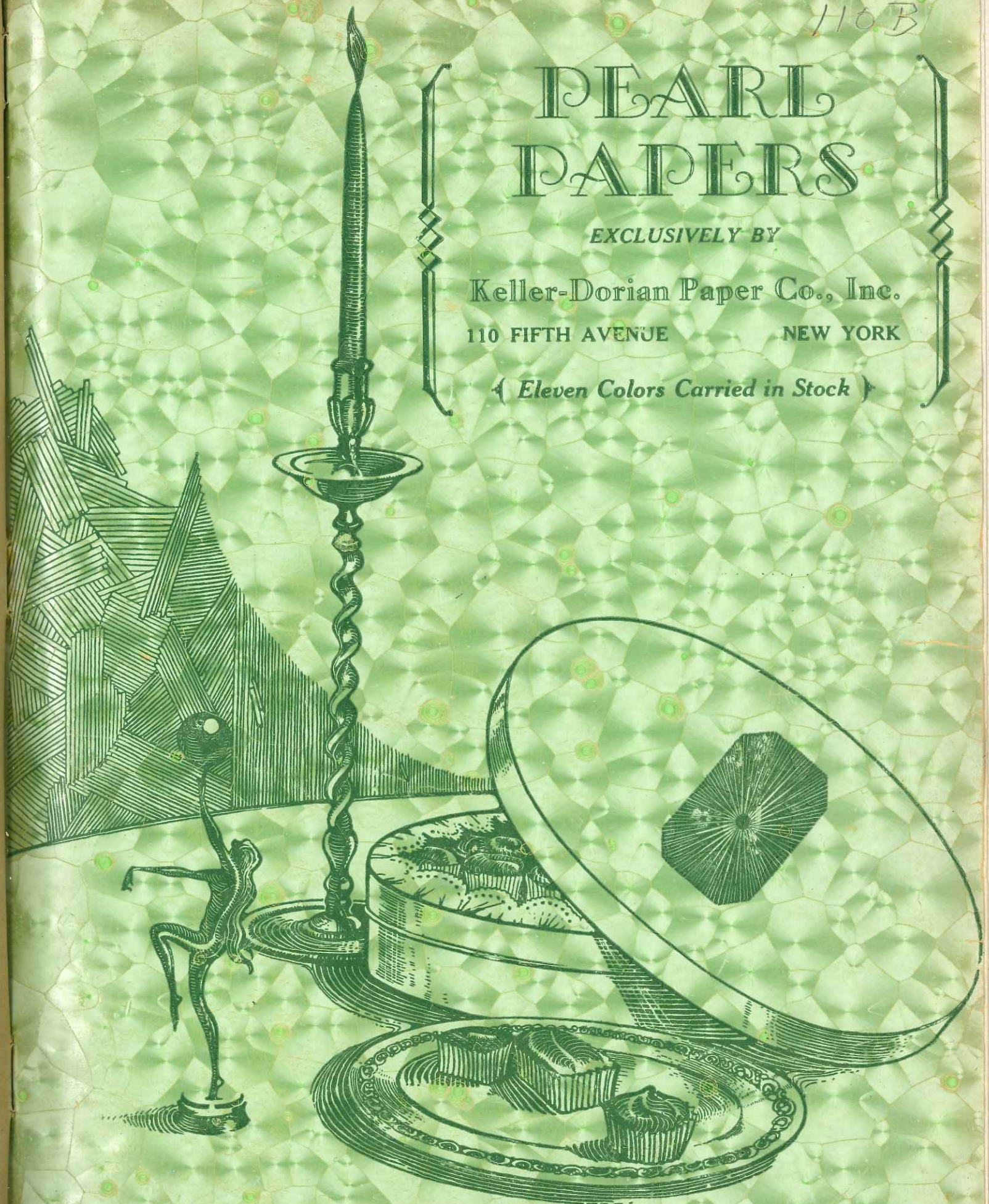
PEARL PAPERS

EXCLUSIVELY BY

Keller-Dorian Paper Co., Inc.

110 FIFTH AVENUE NEW YORK

Eleven Colors Carried in Stock



110C

A COMPLETE SERVICE

Mason Fancy Boxes Modern Mailers

THE conception of paper boxmaking as an art has been the dominating factor in the Mason Box Company since its beginning.

That coupled with a true New England regard for quality and skill in workmanship is responsible more than anything else for the remarkable and steady growth of this business.

You see it in the character of Mason Modern Mailers —sturdy postal shipping containers which withstand the buffeting in the mails without sacrifice in appearance or injury to contents.

And it is fully demonstrated in Mason Fancy Boxes where exceptional ingenuity is combined with modern art sense to perfect cartons with maximum display value.

Whether for protection in the mails or display on retail counters Mason containers have an immediate appeal to those who seek value and fine appearance with quality.

The Mason Box Company

Attleboro Falls, Mass.
Providence, R. I.

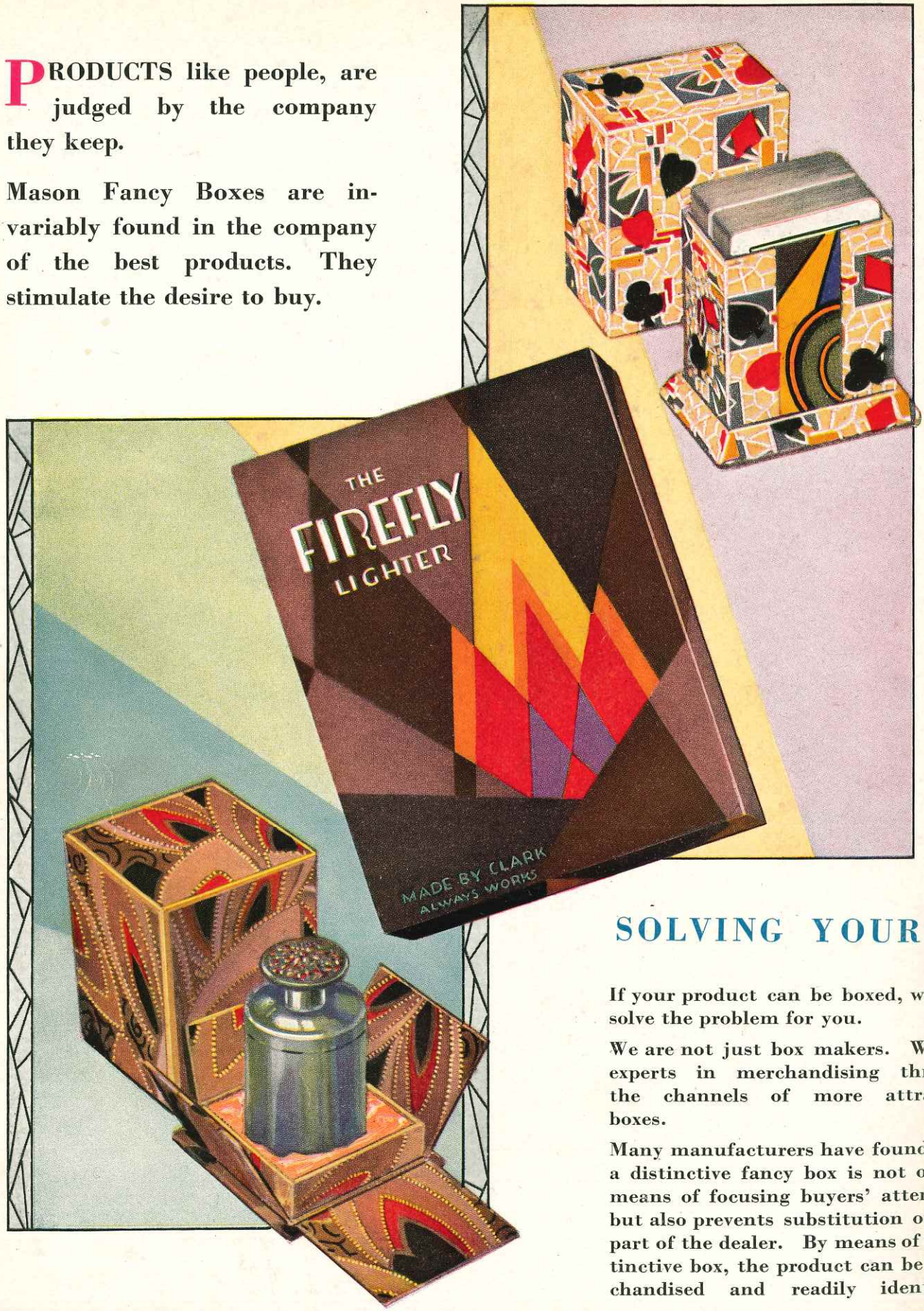
SALES REPRESENTATIVES IN TWELVE CITIES

New York Office and Display Room Flatiron Building-175 Fifth Avenue

110 D

PRODUCTS like people, are judged by the company they keep.

Mason Fancy Boxes are invariably found in the company of the best products. They stimulate the desire to buy.



SOLVING YOUR MER

If your product can be boxed, we can solve the problem for you.

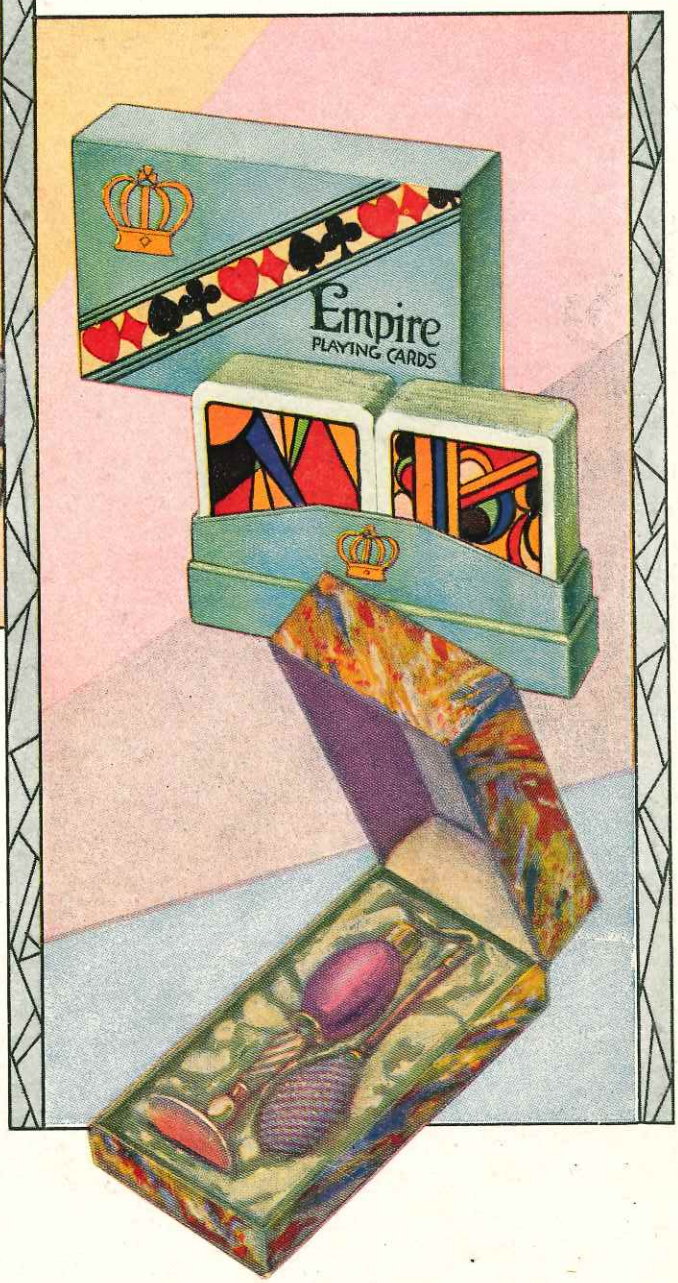
We are not just box makers. We are experts in merchandising through the channels of more attractive boxes.

Many manufacturers have found that a distinctive fancy box is not only a means of focusing buyers' attention, but also prevents substitution on the part of the dealer. By means of a distinctive box, the product can be merchandised and readily identified.

THE MASON BOX COMPANY

110E

WE give to the design of boxes for your product the same excellent care that you give to the manufacture of your products. Mason Boxes delight the eye, are distinctive and pleasingly different.



CHANDISING PROBLEMS

Mason has helped to merchandise products of many well-known concerns. The same experts are at your disposal. At your invitation they will study your product, the channels of distribution, and then design a fitting container.

An interview costs nothing and does not obligate you. Write and let us tell you how Mason boxes will make money for you.

ATTLEBORO FALLS, MASS.

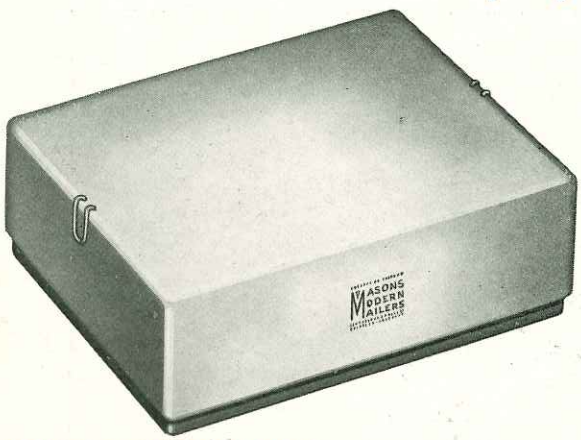
110F

MASON MODERN MAILERS

MEET EVERY POSTAL SHIPPING REQUIREMENT

Years of practice in the manufacture of mailing containers for every conceivable kind of merchandise are reflected in each product bearing the name of Mason. The ingenious construction, concealed reinforcements, the patented easy fasteners and materials made to our own exacting specifications, provide maximum security with positive economy.

Two of the Many Styles Illustrated in Our Catalog



MASON PARCEL POST BOX is the most popular box on the market today. Used for all unsealed mail shipments, it requires no wrapping or tying. The special material used in its manufacture makes it exceptionally strong yet light in weight. It has the approval of the U. S. Post Office Department, as has every mailing container in the Mason line.

MASON LETTER BOX is a two-compartment container which allows a first class letter and second, third or fourth class matter to be mailed together and reach your prospect's desk at the same time. It is as rugged as it is handsome. The envelope compartment is an integral part of the box cover and the window allows the address of the letter to also serve as the address of the envelope and package. No wrapping or tying required.

Our new thirty-two page catalog illustrates and describes a type of container for every class of mail shipment. We will be glad to send you a copy upon request.

Our packaging counsel also offers a unique service. We will study your product and design the box to meet its need. These services are offered without obligation.

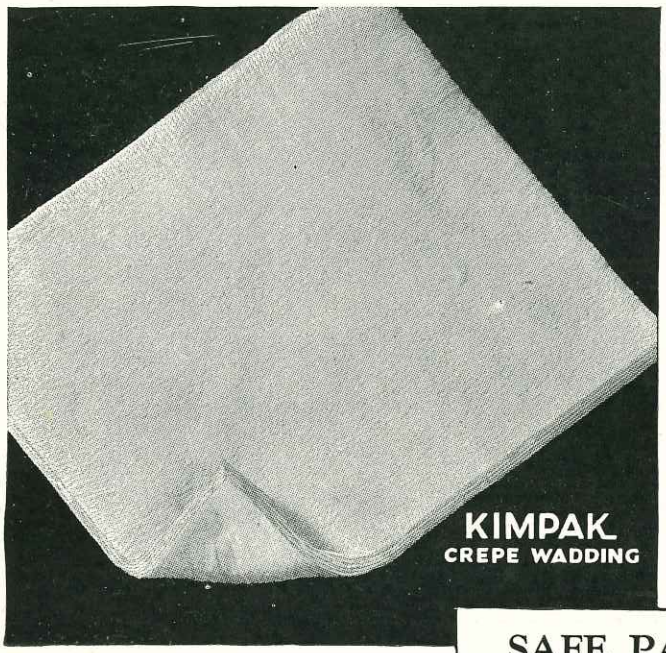
Mason
Modern Mailers

The Mason Box Company, Attleboro Falls, Mass.

New York Office and Display Room — Flatiron Building-175 Fifth Avenue

In your package design . . . specify

Kimberly-Clark Crepe Waddings



Avoids Breakage Protects Finishes

KIMPAK Crepe Wadding is saving money for thousands of firms, as packing protection for a wide variety of products. It is assurance that your merchandise will arrive without damage, clean, attractive and in perfect condition.

Kimpak resilience cushions shocks. Its downy softness protects beautiful finishes. It is capable of absorbing sixteen times its weight in moisture, far in excess of parcel post requirements.

Put up in rolls, sheets and pads of various thicknesses, with or without paper packing (tissue, kraft, parchment, etc.) — according to your requirements. Let us send samples, giving us size of sheet or roll required, and type of product you make.

SAFE PACKING FOR

Atomizers	Jewel cases
Auto accessories	Jewelry
Airplane parts	Lamps
Beads	Leather goods
Bric-a-brac	Lenses
Candles	Mirrors
Candlesticks	Optical goods
Candy jars	Perfumes
China	Pewter
Cigarette lighters	Pharmaceuticals
Clocks	Phonograph records
Compacts	Picture frames
Cosmetics	Radio tubes
Desk sets	Scientific products
Display easels	Silverware
Door hardware	Soap
Drugs	Stuffing bottles or tins of tablets or capsules
Electric appliances	Toilet articles
Food products	Vanity cases
Gift set boxes	Watches
Glassware	
Ink	

KIMBERLY-CLARK CORPORATION
Neenah, Wis.

Sales Offices: 8 So. Michigan Ave., Chicago, Ill.
122 East 42nd St., New York, N.Y.

A New Refinement for De Luxe Packing

LUXURY with strength; softness of velvet—white, beautiful—that's BILLOWPAK, the new Kimberly-Clark product for your package interior.

Air-cushioned—because those sturdy arches of softest cellulose fibre confine AIR, the best of all cushions.

Use BILLOWPAK as pad, wrap or liner: it combines strength, resilience and attractive appearance to a degree not offered heretofore in any other one product.

BILLOWPAK folds any direction without cracking. Superabsorbent, of course. It provides excellent insulation against heat or cold—is dustless. Economical. Samples for the asking.

Kimpak
REG. U. PAT. OFF. AND FOREIGN COUNTRIES
Crepe Wadding

BILLOW PAK
REG. U.S. PAT. OFF. AND FOREIGN COUNTRIES
CREPE WADDING

P. S. *To Boxmakers:* —We are also manufacturers of Kimpak White Box Top Padding. Packed in corrugated cartons; no unnecessary trimming; economical. Send for sample sheets and quotations.

THE LIQUID CARBONIC CORPORATION

Manufacturers of

O. & J. Automatic Labeling Machine

National Semi-Automatic Labeling Machine

General Office: 3100 S. Kedzie Ave.
CHICAGO, ILLINOIS
Labeling Machine Division: 60 Ellsworth St., Worcester, Mass.

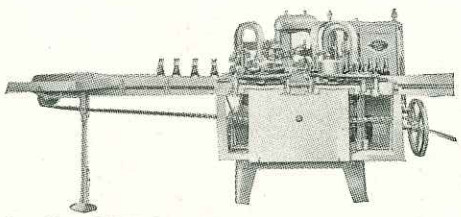
Branch Offices

ATLANTA, GEORGIA
BOSTON, MASSACHUSETTS
BUFFALO, NEW YORK
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEXAS
DETROIT, MICHIGAN
KANSAS CITY, MISSOURI
MINNEAPOLIS, MINNESOTA
NEW YORK, NEW YORK
PHILADELPHIA, PENNSYLVANIA
PITTSBURGH, PENNSYLVANIA
ST. LOUIS, MISSOURI

THE COMPANY

The Liquid Carbonic Corporation founded in 1888 is the world's largest manufacturer of Bottlers Machinery and Carbonic Gas. It recently acquired the O. & J. Machine Company, Worcester, Mass., and the National Labeling Machine Company, Long Island City. The products of both these companies are now being manufactured by the O. & J. Labeling Machine Company which is being operated as a subsidiary of the "Liquid" at Worcester, Mass.

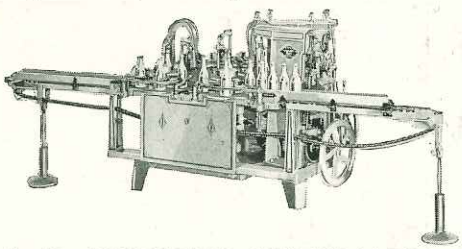
PRODUCTS



O. & J. "SINGLE" AUTOMATIC ROTARY LABELER

The "single" O. & J. Labeler is a rotary type machine and is completely automatic. It has a capacity of 80 containers per minute or 3200 dozen containers per 8-hour day.

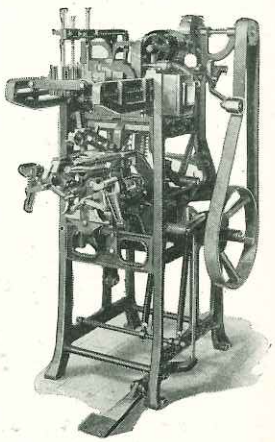
There are eight heads and top grips for receiving and holding the bottles. By reason of these eight heads the machine operates at a comparatively slow speed.



O. & J. "DUPLEX" AUTOMATIC ROTARY LABELER

The Duplex Labeler is a large capacity rotary type machine, completely automatic. It will handle 120 containers per minute or 4800 dozen containers per 8-hour day.

The operation of this machine is similar to that of the "Single" machine described above, the extra capacity being obtained by having ten heads instead of eight on the turntable, and two points at which labels are affixed to the containers.

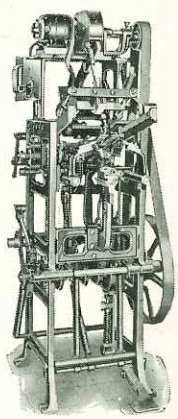


NATIONAL "STANDARD" LABELER

This is a hand fed or semi-automatic labeling machine. With it practically any size bottle may be labeled, with either body or neck labels or both.

When equipped with a foiling attachment, foil may also be applied.

This machine has a capacity of 40 containers per minute or 1600 dozen containers per 8-hour day.



NATIONAL "MIDGET" LABELER

This machine is a smaller and simpler model of the "Standard" type labeler. It will affix a single label on anything from a $^1/_2$-oz. vial up to a quart bottle, provided the labels do not go more than half way around the bottle.

This machine has a capacity of 40 containers per minute or 1600 dozen containers per 8-hour day.

SERVICE RENDERED BY REPRESENTATIVES

The labeling machine division of the "Liquid" can help you increase the efficiency of your labeling operations—by speeding up production—by more accurate labeling (especially on difficult labeling jobs) by economizing through fewer machines and less manpower.

One of our qualified labeling machine representatives will be glad to call and discuss your labeling problem. He has facts and figures on comparative labeling costs, savings in time, money and labor on various labeling operations.

Write for Catalog

We will be glad to send you on receipt of a request on your letterhead, a copy of our booklet, "Labeling Machines." It contains a vast amount of valuable information on labeling equipment.

In the production of tube satisfaction, as in advertising, it is necessary to please two parties, the manufacturer and the ultimate consumer.

WIRZ tubes, meeting the needs of the manufacturer in every structural detail, go beyond this to meet the desires of the consumer. Of great beauty before use, they retain a desirable appearance throughout all the period between purchase and ultimate discard.

What more can be demanded?

WIRZ

A. H. WIRZ, Inc.

CHESTER, PA.

NEW YORK OFFICE
Carbide & Carbon Bldg.
30 East 42nd Street

CALIFORNIA OFFICE
1231 East 7th Street
Los Angeles

CHICAGO OFFICE
Railroad Exchange Bldg.
Jackson & Michigan

112-B

The art of making a product as perfectly as the mind of man can contrive . . . this has been mastered by the WIRZ organization. The art of turning this ability to the service of our clients, large and small, when and as they need it . . . this too has been mastered by the WIRZ organization.

These achievements . . . beyond all competitive considerations . . . are the reason for WIRZ' outstanding position in the tube making field today.

WIRZ

A. H. WIRZ, Inc.
CHESTER, PA.

NEW YORK OFFICE
Carbide & Carbon Bldg.
30 East 42nd Street

CALIFORNIA OFFICE
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Los Angeles

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Jackson & Michigan

Prepared and Printed by
Service Department,
"Modern Packaging"

McLaurin-Jones Company

Brookfield, Mass.

Ware Fancy Papers

Present an infinite selection of patterns, colors and finishes—distinguished by the very variety of their design. Years of outstanding achievement have made the phrase "designed and created by McLaurin-Jones" a token of quality unexcelled.

The merchandising and sales-compelling possibilities of these few samples of the Ware Fancy Line are apparent on first view. Investigation will go still further toward justifying the contention that Ware Fancy Papers are preeminent in their field.

Sample books and large sheets may be had for the asking.

Waregold B Scroll

Gypsy Stripes

Color-Waves

Cloudettes

Cameo

Wareplatinum Hammered

McLaurin–Jones Co.

Brookfield, Mass.

Gentlemen:

Kindly forward to the undersigned sample books of Ware Fancy Papers. It is understood that there is no obligation on my part.

Name.....

Address.....

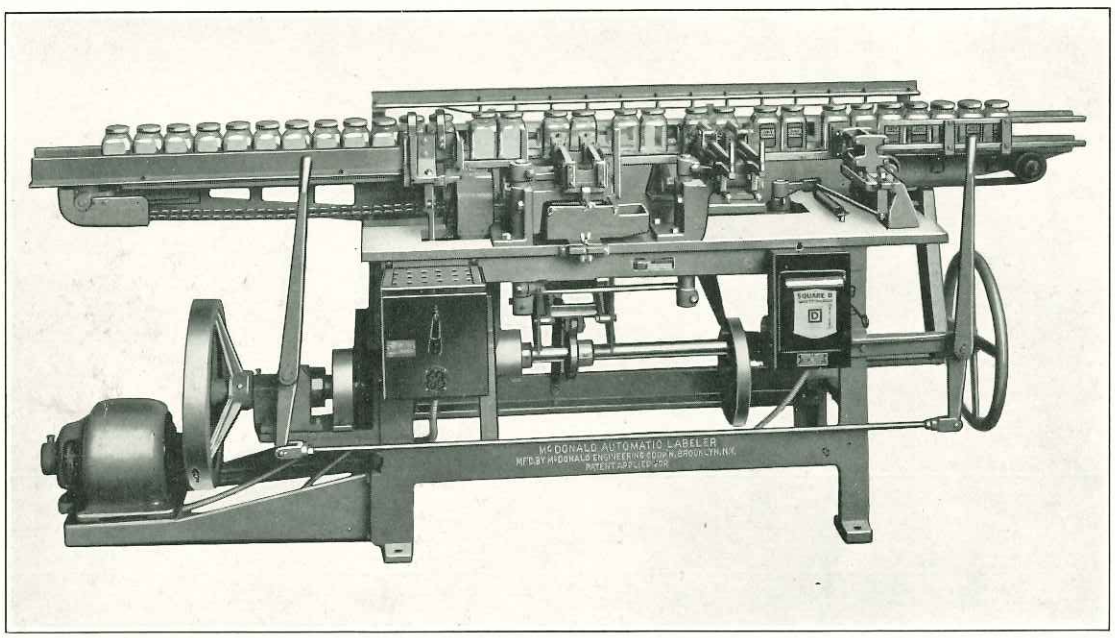
McDONALD ENGINEERING CORP.

220 VARET ST. BROOKLYN, N. Y.

◆ AUTOMATIC LABELING ◆ MACHINES

THESE LABELING MACHINES are STRAIGHT-LINE type (not rotary). They automatically feed the package or container and apply paper labels on bottles, boxes, etc.

All labelers are specially designed, "Tailor Made" machines, built to fit your particular type and size of package. They are not stock machines and do not have standard movements that are very often a hindrance to speed and to first class, accurate, clean labeling. For ten years they have labeled many nationally known products (see opposite page) and are thoroughly established and noted for their extreme simplicity, speed and perfect workmanship.



Duplex Labeler—Labels Two Containers Simultaneously

SINGLE LABELER—This machine applies spot labels on all packages, and one label on three sides. A neck label attachment may be added when desired. Speeds range from 30 to 80 per minute.

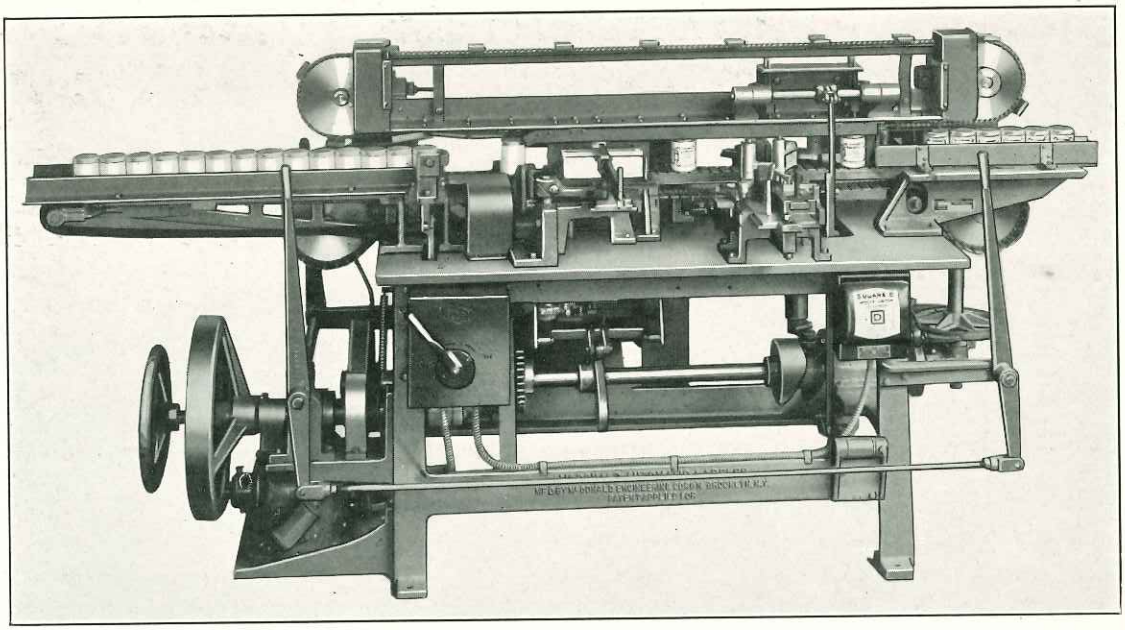
FRONT AND BACK LABELER—Applies two labels simultaneously on opposite sides or two labels all around the container, or one label if desired. Speeds range from 30 to 80 per minute.

DUPLEX LABELER—Is both of the above types but labels two containers or packages simultaneously without increasing the machine speed. It is two labelers in one and is a slow running, long-lived machine with a labeling speed up to 144 containers or 288 labels per minute. It is designed to keep pace with the modern high speed cartoning and wrapping machines and eliminates the necessity of adding another labeler, another operator and additional floor space for doubling your production.

Specifications—Conveyors—34 in. above the floor. Length—7 ft. overall. Weight—1400 to 2000 lbs. Motor—½ H. P.

A STRAIGHT LINE IS THE SHORTEST DISTANCE BETWEEN TWO POINTS

McDONALD ENGINEERING CORP.



ALL-AROUND LABELER (ABOVE)—Applies one label all around the body, or the body and neck of bottles. It is also of the STRAIGHT-LINE design employing the latest and most improved method for applying gum over the entire surface of the label and for lapping it accurately.

SPOTTER—Labels round bottles with raised lettering by automatically feeling the letters and turning the bottle to the proper position before applying the label. Your trade mark in the glass means a great deal if you can properly and economically apply the label in the right place. This machine does it.

DIFFERENT FROM ALL OTHERS IN LABEL APPLICATION

McDonald labeling machines do not employ any intermediate means for transferring a gummed label from the label magazine to the surface to be labeled. The magazine itself deposits the label on the package. Therefore, the labels are registered accurately and are applied in a straight, clean manner.

Important Features: Does not require inspectors to complete the job. Adjustable for different sizes in 10 minutes. Gums the entire surface of the label.

LONDON:
Windsor House
Victoria St., S. W. 1

Merrick Scale Mfg. Company

182 AUTUMN STREET,
PASSAIC, N. J.

Designers and Manufacturers of Weighing Machinery

PRODUCTS:

Sorting Scales or Check-Weighers, Conveyor Scales for belt, pan or gravity roller conveyors, Hopper Scales, Special Weighing Machines.

SORTING SCALES:

The Merrick Sorting Scale is used to mechanically reject light or heavy weight packages, cans, cartons, etc., without any interruption in the stream. The scale is built as a complete unit to suit any conveyor and may be inserted at any point in the stream.

The article to be check-weighed is fed to the scale, which checks by weight, rejecting or pushing aside the under- and over-weights, allowing the true weights to pass on.

Small cans to large containers may be handled with allowable tolerances of a few grains or ounces.

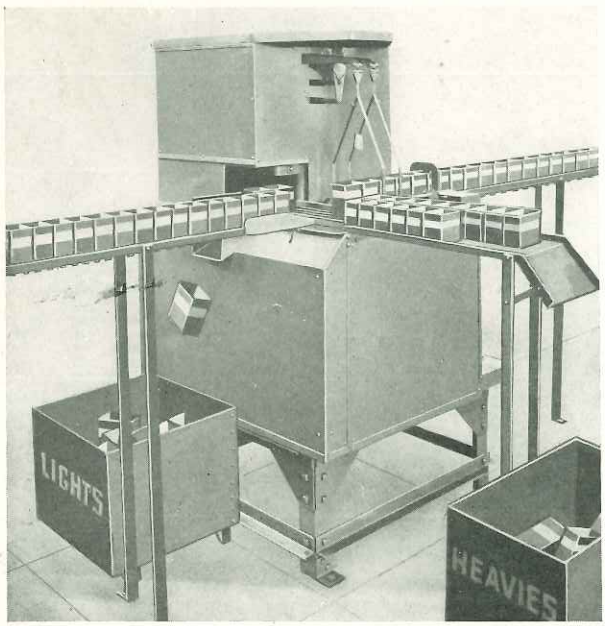


Fig. 1

Fig. 1 shows an actual installation of the Merrick Sorting Scale, check-weighing small empty cans before filling. The rejection is for under- or over-weight cans and the tolerance allowable is five grains and the speed sixty cans per minute input.

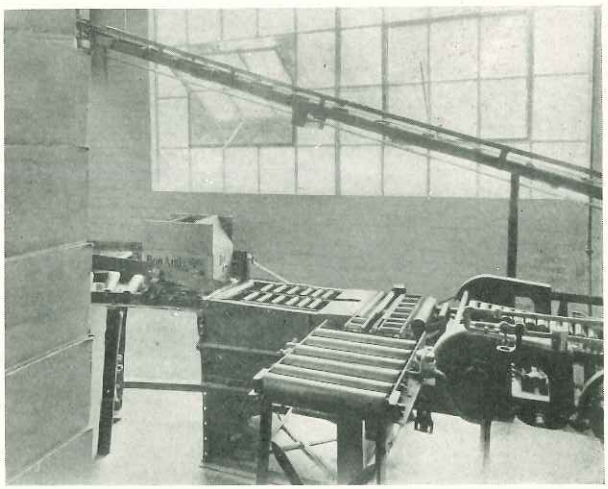


Fig. 2

Fig. 2 shows the Merrick Sorting Scale rejecting light weight cartons weighing between 15 and 35 pounds with an allowable tolerance of 2 ounces at a speed of 30 cartons per minute.

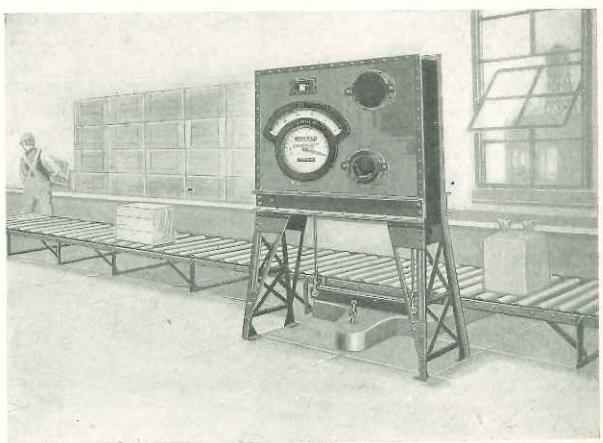


Fig. 3

Fig. 3 shows the Merrick Addoweight which weighs packages, bags, boxes, etc., while in transit over a gravity roller or belt conveyor, indicating the net weight on the dial, totalizing the weight on one counter and indicating the number of weighings on a second counter.

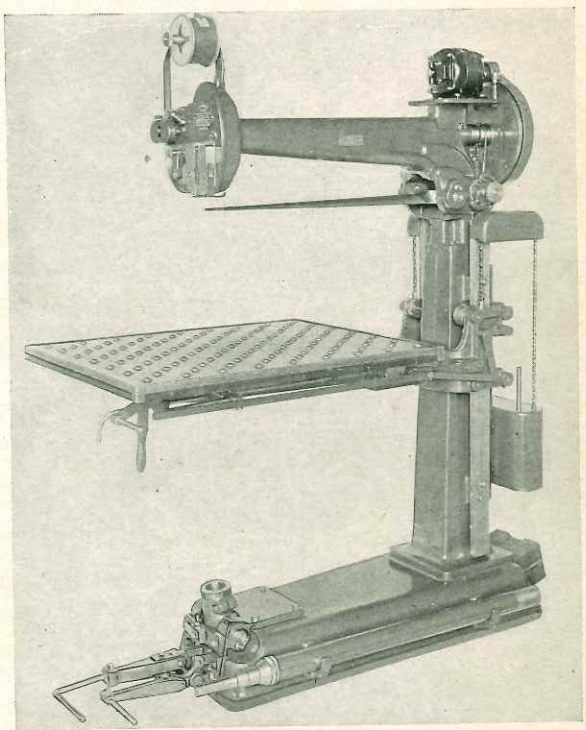
Merrick Engineers are ready at all times to discuss your weighing problems and to assist you in solving them.

Rx For Perfect Stitches

Carton perfection and machine perfection go hand in hand. And when it comes to machine perfection *all* hands point to

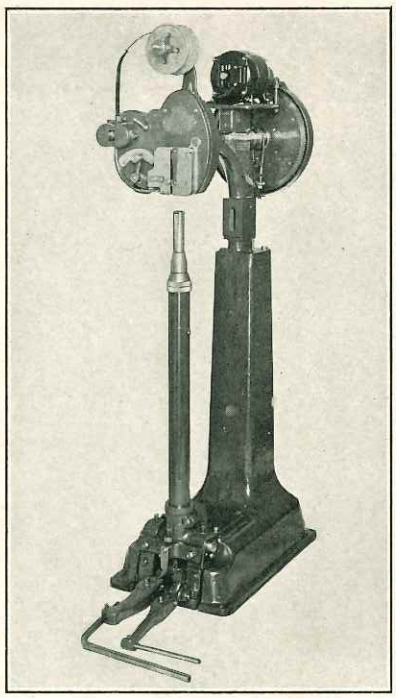
MORRISON

MORRISON "PERFECTION"



Morrison Combination Top and Bottom Stitcher

Rx For Perfect St

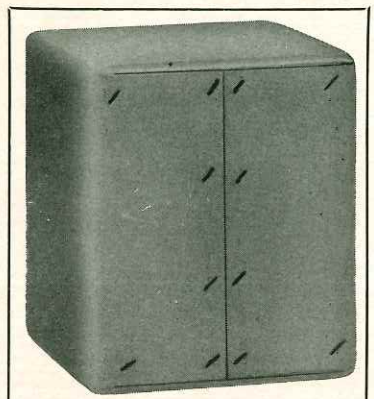


Morrison Perfection Bottom Stitcher

ALL stitchers look alike — to the casual observer. But the man who uses the machine knows that perfection lies, beyond appearances, in painstaking design and painstaking construction.

It is so with Morrison Stitchers — Top, Bottom and Combination. Forty years of conscious, constant improvement and change, to meet changing boxmaking conditions, have yielded a series of machines which in construction, in material and in operation amply deserves the name of "Perfection."

It is with this certain knowledge of the quality built into Morrison Wire Stitchers and the perfection of design and workmanship which they typify that the J. L. MORRISON CO. guarantees every machine that leaves its plant as "PERFECT IN MATERIAL AND WORKMANSHIP".



Box showing Morrison Diagonal Stitching

The "Perfec tion" Botton Stitcher i designed t wire - stitcl the flaps a the botton of shippin containers before packing. This method o stitching, endorsed by all railroads and othe carriers as the safest and most satisfactor method of sealing, eliminates all adhesives tapes, twine, etc. and reduces labor costs whil increasing production.

The Morrison "Perfection" will produce mor work in less time than any other device fo sealing boxes now on the market. Positive con trol by the operative is obtained by the simpl trip lever mechanism, a slight pressure upo which instantly releases the brake and drive the stitch returning immediately to the read position for the next stitch or series of stitches

The simplest stitcher head construction com patible with good engineering practice is em bodied in all Morrison machines. In th bottom sealer the mechanism of the stitche

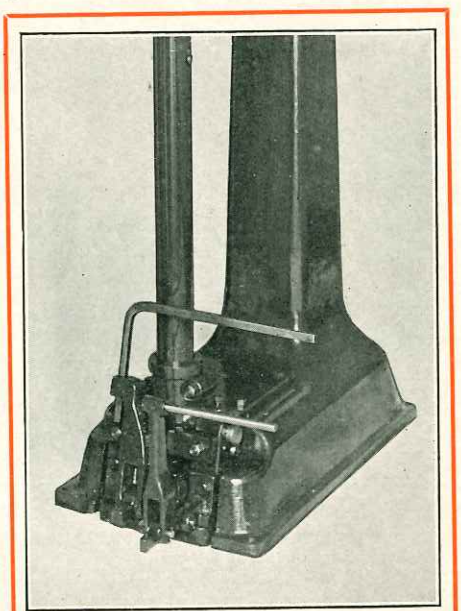
TCHES-MORRISON!

Morrison "Perfection" Stitchers Top, Bottom and Combination

head contains not a single part which is not necessary—but not a part is eliminated which will aid in the securing of perfect stitches.

Floor space, important in these days of high rents, is a slight factor when the Morrison "Perfection" is in use. Occupying a space of eighteen by thirty-nine inches when in use, the simple movable pedal controls reduce this by about one fourth when the machine is not producing.

In construction, all Morrison machines are simple and yet durable, every part being built stronger than absolutely necessary. The factor of safety, by which each part exceeds in strength the demands likely to be put upon it in even the heaviest work, is so great as to reduce replacements to an insignificant item. Built like a motor car, every part is interchangeable, permitting of immediate replacemen.



Bottom Stitcher with pedals turned up when not in use

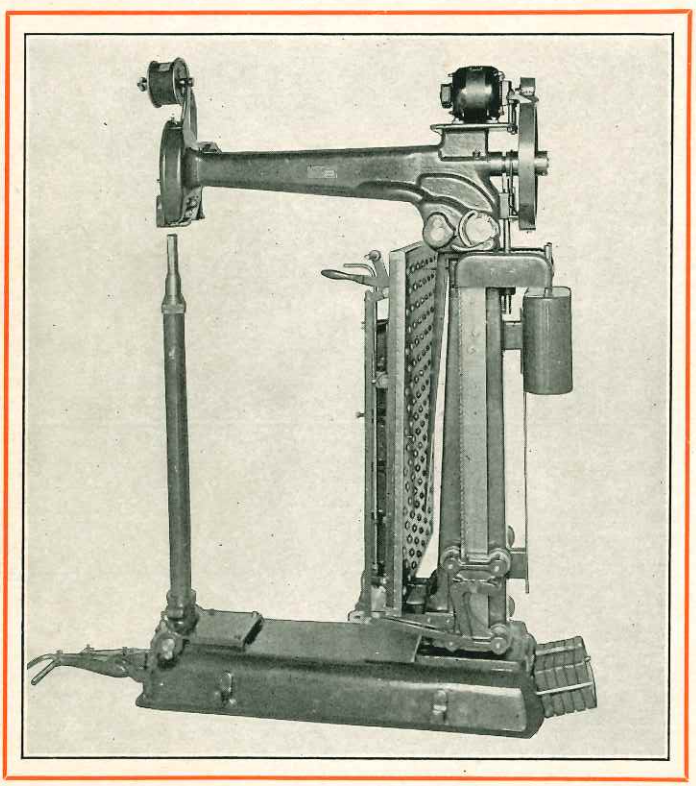
"Perfection" was long ago chosen as the name of the Morrison product. Today, when hundreds of Morrison's are in use (in some instances a hundred in one installation) the name "Perfection" has come to be a token of performance. The buyer of a Morrison stitcher is assured of the best possible machine both by the measure of his own judgment and by that of the hundreds of satisfied—and more than satisfied—Morrison users.

It is for this reason that the J. L. MORRISON CO. solicits inquiries not only from the man who buys his first machine and wants the best, but also from those who, having used other machines, wish to make a comparison between the results they are now obtaining and the ultimate in stitcher performance.

MORRISON STITCHERS

THE Morrison-Combination top and bottom stitcher is designed for the plant in which production is intermittent. In such cases it is often desired that the same machine be used for top and bottom sealing.

For these conditions the Morrison-Combination is ideal. Occupying no more space than either a top or a bottom stitcher, it is easily transformed from the first to the second in less than a minute.



The Morrison Combination Stitcher is here shown with the post in position for bottom stitching. One move of the hand is required to remove post and another places the table in position for top sealing.

Working as a bottom stitcher it has all the strength and speed of the standard Morrison while as a top sealer it again embodies every characteristic of the single purpose machine.

Every box maker and manufacturer has need of a Morrison machine. The individual requirements may vary with the needs of the manufacturer but the elements which go toward box-making efficiency — speed, reliability and economy — are embodied in every product of the Morrison plant.

Submit your problem: — over forty years' experience in designing machines to meet special requirements is at your service.

THE J. L. MORRISON COMPANY

GENERAL OFFICES AND FACTORY
NIAGARA FALLS, N. Y.

424 West 33rd Street
NEW YORK CITY

116 West Harrison Street
CHICAGO

445 King Street, West
TORONTO, CANADA

Merchandising Authorities Agree that— "STYLE APPEAL" Stimulates Sales

BOX-MODE papers of Style-Appeal, by Middlesex, giv your package that Smart, Modern look that attracts toda buying public.

BOX-MODE papers are available from stock in a beautiful array of authentically fashionable colors, in lively modernistic and standard embossings.

Working Samples by Return Mail

CAMEO-MODE

VANI-MODE *Floral*

GOLDEN-MODE

W. P. *Embossed*

VANI-MODE *Block*

MIDDLESEX PRODUCTS CO.
A Modern Mill
38 Chauncy Street
Boston, Massachusetts

Middlesex ★ Coated Papers

JUST MAIL THIS COUPON FOR SAMPLES

Middlesex Products Co., 38 Chauncy St., Boston, Mass.
Gentlemen:
Please put our name on your mailing list, for future mailings of BOX-MODE papers ☐
Please mail working samples of.....
.....
Signed.....
Company.....
Address.....
.....

PRODUCTS
COMPOUNDS
ARTICLES
PREPARATIONS
MATERIALS
MERCHANDISE
GOODS

NAME THEM WHAT YOU WILL

«EMPECO» CONTAINERS

INDIVIDUALIZE
DISTINCTIFY
IMPRESS
DISPLAY
SELL

Whether Foodstuff, Paint, Oil, Insecticide, Candy, Incense or Cosmetic... the urge to buy comes first with

THE PACKAGE

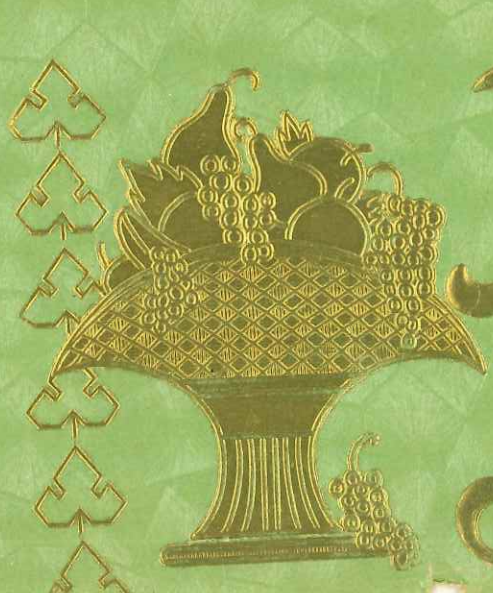
"EMPECO"- MADE PACKAGES
unfailingly reach the front-line display.

METAL PACKAGE CORPORATION

Sales and Executive Offices: 110 E. 42nd St. New York City
Plants-New York City, Baltimore, Brooklyn.

STAMPED WITH

BRIGHTEN LEAF



Nuts and Fruits

"NATIONAL"

PACKAGING MACHINERY

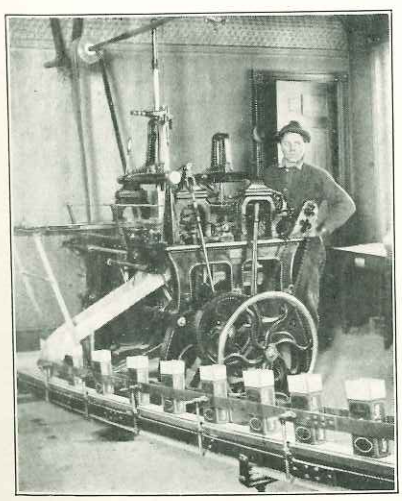
feeds, forms & dates, lines, weighs & fills, seals, wraps & hermetically seals cartons

Fills Bags; Packs Cans; Forms Paper Boxes, Tapered Pails, Display Containers, etc.

Name and Type of Machine	Ask for Leaflet No.	Package Limits Minimum	Package Limits Maximum	Rated Speed per Minute	Motor (H.P.) Required	Operator Required
"Improved Brightwood" Paper Box Forming Machine	1	¾ x 1 x 1½	5¾ x 9½ x 16 (A)	20 to 60	1	1 (C)
Carton Forming Machine	1	½ x 1½ x 1	(B) x 14 x 6¾	25 to 35	1	1 (C)
"Scott" Net Weighing Machine Gravity Type	2	None	None	20 to 30	None	1
Semi-automatic Power Type	2	None	None	15 to 35	⅛	1
Full Automatic Power Type	2	¾ x 1½ x 2	3½ x 6 x (D)	25 to 35	⅛ & ½	None
"Improved Bond" Gross Weighing Machine (F)		**"ADAPTABILITY" IS OUR KEYNOTE**				
Model MG	5	¾ x 1 x 1	5 x 5 x 14	10 to 30	½	1
Model MH	5	¾ x 1 x 1	5 x 5 x 14	10 to 50	¾	1 (G)
Model MJ	5	¾ x 1 x 1	3⅞ x 5 x 10	25 to 35	¾	None
Model MK	5	¾ x 1 x 1	3⅞ x 5 x 10	50 to 70	1	None
Model ML	5	¾ x 1 x 1	3⅞ x 5 x 10	25 to 35	1	None
Model MN	5	¾ x 1 x 1	3⅞ x 5 x 10	50 to 100	1 to 1½	None
"Improved Johnson" Bottom Sealing Machine	3	¾ x 1¼ x 2⅜	3¾ x 6 x 9	20 to 40	2	1
Top Sealing Machine	3	¾ x 1⅞ x 3	3 x 5 x 8	30 & 60	1	None
Combined Sealing Machine	3	¾ x 1⅞ x 3	3¾ x 6 x 9	20 to 40	2	1
Lining Machine	3	1 x 2 x 3	3 x 5 x 7	25 to 35	1	None
Wax Wrapping Machine	6	½ x 1 x 2	4 x 6¾ x 11½ (E)	30 & 60	1	None

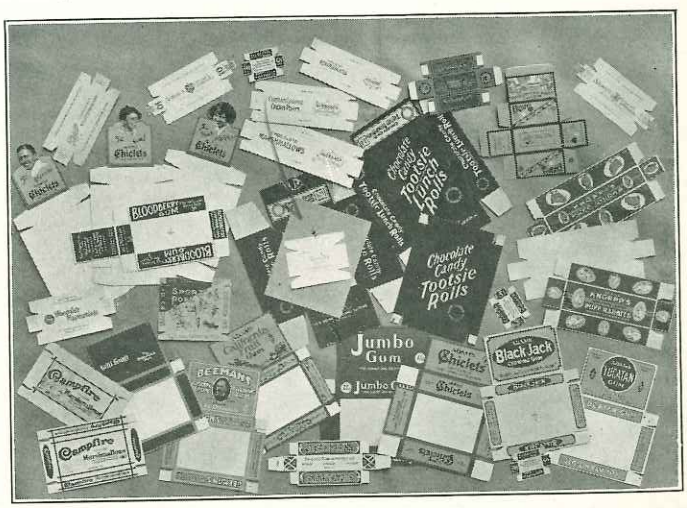
References: (A) No two in same box. (B) Conditional. (C) Part time only. (D) No limit. (E) Two models included. (F) Capacities ½ ounce to 5 pounds. (G) Two operators optional.

Special Limits, smaller or larger than those stated, can usually be arranged for when required.
Operation is seldom satisfactory when a minimum and a maximum size of package are handled on one machine.
Proportions are rarely practical when a minimum and a maximum dimension are combined in the same package.



"Brightwood" Carton Former

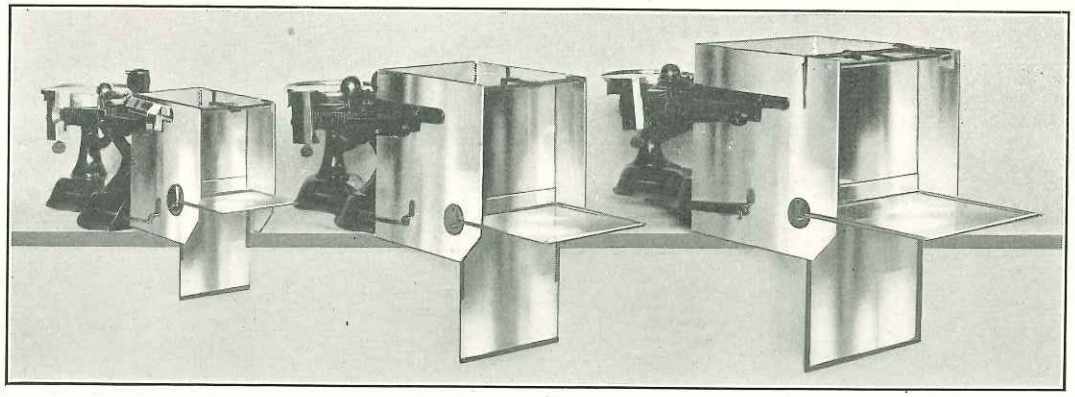
The *"Brightwood"* box, carton and pail former has an unfailing automatic feed built right into it, which takes up no additional floor space and costs nothing extra.



Typical "Brightwood" three-process-box blanks

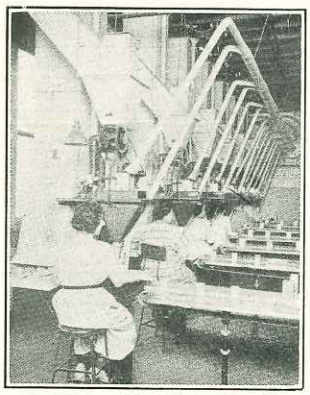
The "SCOTT" Line of Net Weighers

Equipped with a gravity-controlled friction compensating device

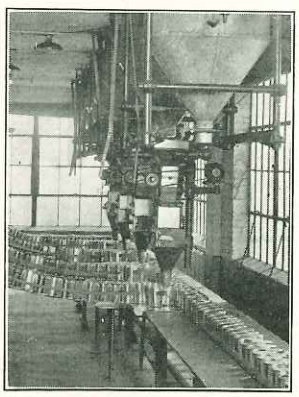


The simplest and most accurate weighing principle known—a single-lever, even-balanced, agate-bearing scale

No power required on free flowing materials



Model A with FJ feeder handling "Forbes'" Spices



Model C with FE feeder on "Maxwell House" Coffee

Built in 3 models—capacities ¾ to 8 oz., ½ to 3 lbs., 1 to 5 lbs. The size of the "Scott" used is determined by the range of weights to be handled.

The price of the gravity "Scott" has never been changed. Many of these weighers have given continuous service for twenty years.

Any "Scott" may be embodied in our standardized 30- and 60-per-minute package handling and settling units. These are of both rotary and straight line type, arranged with many optional conveyor directions.

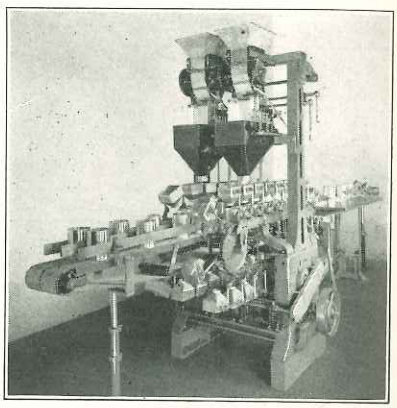
Three types of power agitator, interchangeable with the gravity feeding attachment, are here shown:

Type FE measures the bulk of the load and dribbles the finishing stream, thus increasing production without sacrificing accuracy.

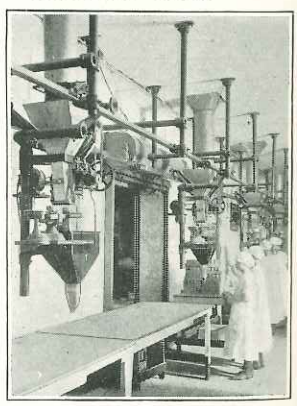
Type FH preserves fragile materials, such as small crackers, in unbroken condition, and will not separate mixtures, such as whole pickling spice.

Type FJ forces sticky powders, such as pulverized coffee, in a fine, steady stream —without which accurate weighing is impossible.

Any of these semi-automatic power weighers may be mounted portably to serve a series of storage and supply hoppers, grouped in a straight line or radially about a common center, if preferred.



60-per-minute full automatic on "La Touraine" Coffee



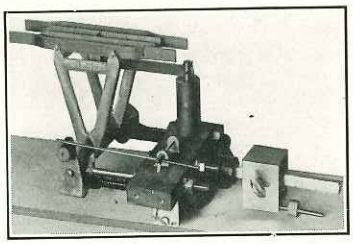
Model C with FE feeder weighing "Skinner's" Macaroni

Model A with FH feeder handling "Berdan's" Teas

The "IMPROVED BOND" Line of Gross Weighers

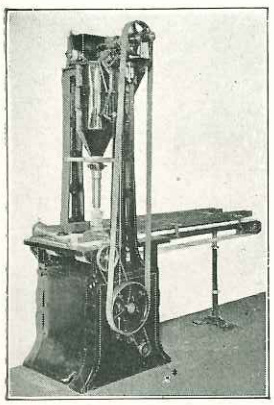
Equipped with special deaerating auger feeders for powdered materials. These make operation practically dustless, insure sanitary working conditions and reduce waste to a minimum.

It is simple and light



The snappy four-pivot, agate-bearing scale which electrically controls all weighing stations

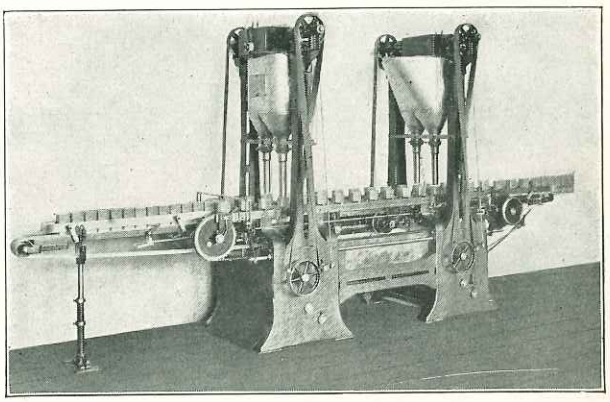
It is accurate and durable



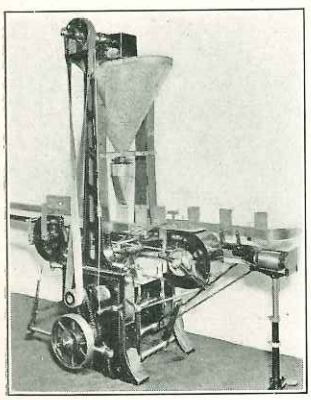
Model MG semi-automatic

MG may be optionally equipped (a) as a weigher, for special accuracy; (b) as a packer, for snug containers or those having reduced filling openings; (c) as a volume filler, for speed. Gravity gates supplied for free-flowing products.

MN is interchangeable to five distinct types of mechanical agitator for product, combined with shaker and/or press for package. Each side may be operated independently.



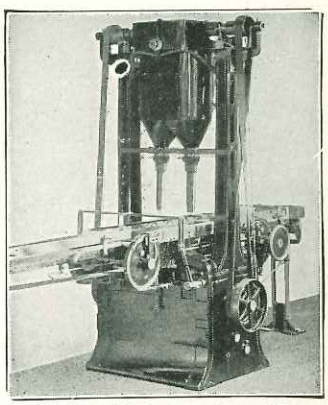
Model MN twin tandem automatic



Model MJ fully automatic

MJ eliminates the operator required on model MG and may be automatically connected with package forming, lining, sealing and wrapping units.

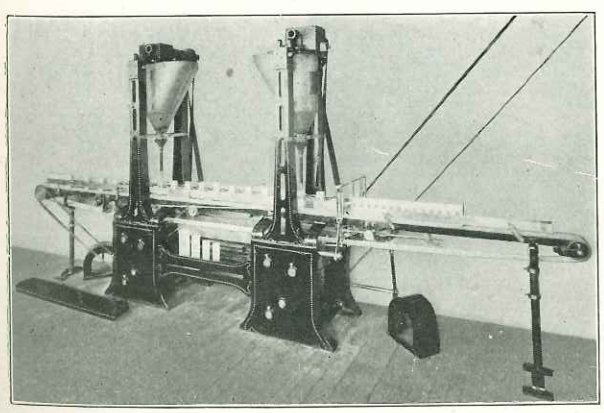
MK is most valuable where high production rather than accuracy is desired. It has a record of 61 to 65 packages per minute over a period of 2½ years.



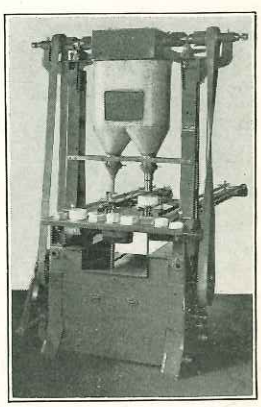
Model MK twin automatic

ML, like model MN, fills the bulk load quickly at the first station and check-weighs, under the influence of a fine dribble stream, at the second station. It also starts and stops automatically with the supply of packages.

MH, with an operator to handle each package twice, is popularly used to duplicate the work of model ML. It is slower but far more flexible, as it may also be equipped as a twin weigher, packer or filler. In such case the operator handles two packages simultaneously.



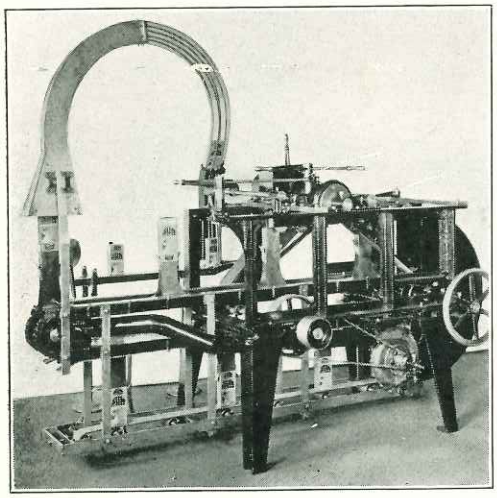
Model ML tandem automatic



Model MH twin semi-automatic

The "IMPROVED JOHNSON" Line of Carton Sealers

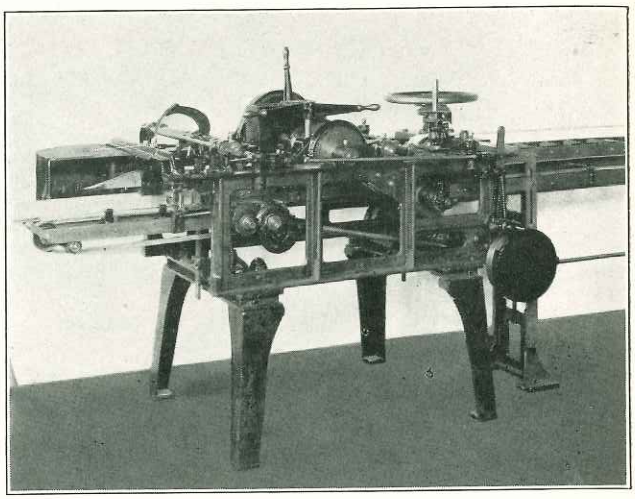
Liners for grease-proofing and Wrappers for moisture-proofing



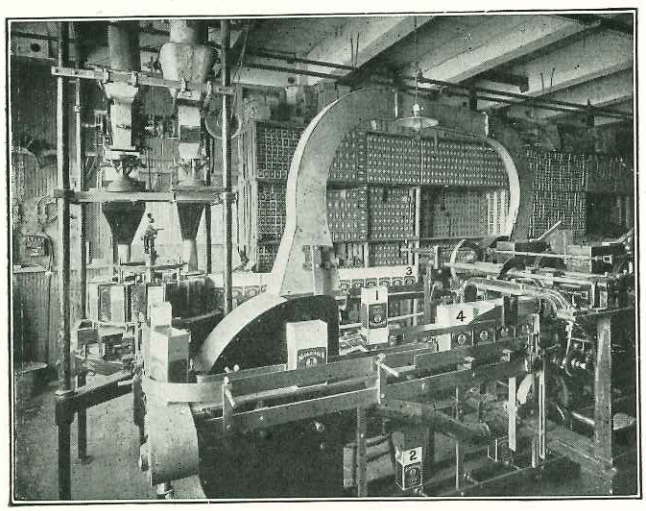
Bottom Sealing Machine

Bottom Sealer—Sets up standard knock - down or "glue-end" cartons ready for the lining or filling process.

Top Sealer—Seals filled cartons sift-tight. If they each contain a lining its top is interfolded with the carton flaps.



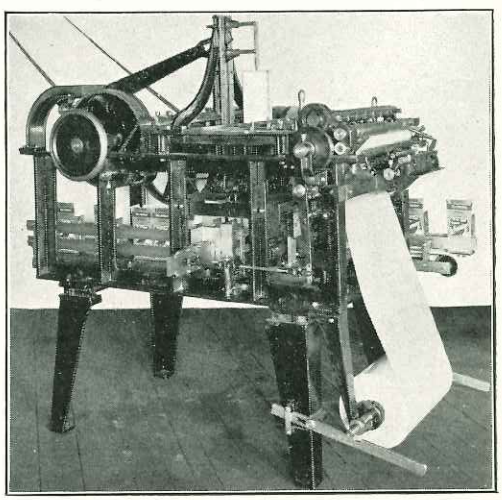
Top Sealing Machine



Combined Bottom and Top Sealer

Combined Sealer—has separate bottom and top sealer built side by side in one frame, thus saving floor space and first cost. Is quickly adjustable to many sizes.

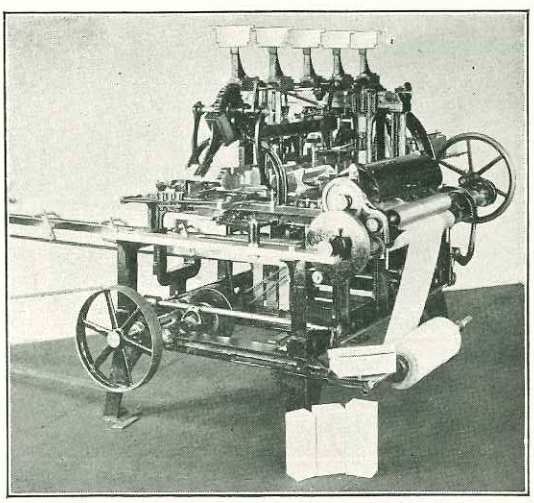
Liner—makes and inserts a glued bag of glassine, parchment or plain paper.



Lining-bag Maker and Inserter

Wrapper—hermetically (heat) seals a transparent sulphite or waxed glassine paper, forming the longitudinal seam on side or bottom of package as preferred.

All our machines are adjustable (see package limits) and may be automatically connected in series in many optional floor-plan arrangements. Installation is made at our expense east of the Rocky Mountains.



Wax Wrapping Machine

The cost of our recommendations is a sample of your package and product.

An estimate of your production needs will help us to quote price and delivery date.

(See three preceding pages)

NATIONAL PACKAGING MACHINERY COMPANY

Manufacturers

473 WATERTOWN STREET, NEWTONVILLE, BOSTON, MASS.

TIDY BOX PAPER

AMERICA'S SUPER-FINE FANCY PAPERS FOR THE DISCRIMINATING MERCHANDISER

Designed and Manufactured by

NELSON COMPANY

1326 West Washington Boulevard

CHICAGO

Sales Representatives

LOUIS DEJONGE & Co.

CHICAGO NEW YORK

TIDY BOX PAPERS bring exquisite new creations, steadily strengthening the fashion and leadership that began with their origin.

In this modern day fancy covered boxes in endless shapes and sizes are included in every well thought out merchandising plan.

TIDY BOX PAPERS are refreshingly original. Whether you are in search of a brilliant design, or simple pattern to complete a quiet background, you will find unusual and charming designs in this TIDY BOX PAPER booklet.

515 →

505 →

510 →

511 →

524 →

501 →

506 →

521 →

Write for this catalog—thirty colorful designs—Using your business stationery.

PACKAGE MACHINERY COMPANY

Over 150 Million Packages per day are wrapped on our Machines

General Offices: Springfield, Massachusetts

New York — Chicago — Los Angeles

London: Baker Perkins, Ltd., Willesden Junction, N. W. 10

Manufacturers of Package Wrapping Machines

THE picture below will give you some idea of the wide variety of products wrapped on our machines—crackers, soap, razor blade cartons, Eskimo Pie, stick candy, skinless frankfurters, chewing gum, etc. We are one of the oldest makers of wrapping machines in America, being pioneers in replacing hand-wrapping with machines.

It is seldom necessary to go to the expense of designing a new machine to wrap a given product. From our large line of models we can usually find a machine which, with slight adaptations, will serve the purpose.

Replacing Hand-Wrapping

Only in factories where production is very small will you still find hand-wrapping, for even when a machine can be operated at only half its capacity, it shows marked savings over hand-wrapping. And of course the machine does better work—uniformly neat.

Newer and Better Machines

Great as were the savings made by our early wrapping machines which replaced hand-wrapping, still greater savings are being made today with the new models now in use. They operate faster—in many cases twice as fast. That means that production can be doubled in the same floor space. Often the installation of such high speed machines makes it unnecessary to build or to rent more floor space. Higher speed also means lower labor costs.

These modern machines also make savings in material costs—the wrappers require less overlap; this becomes an important saving where volume is large.

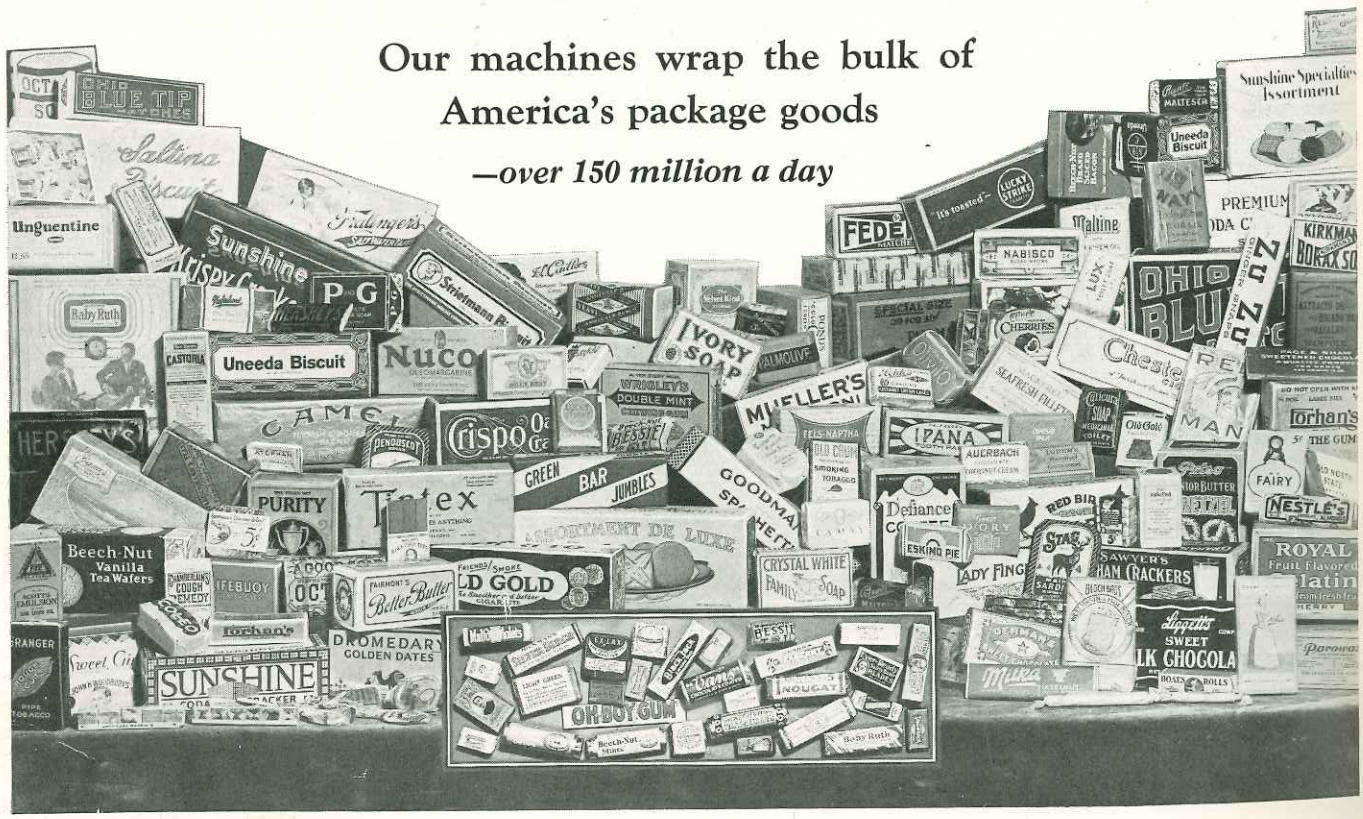
We have improved upon the work done by wrapping machines. Due to exclusive features, our machines produce a tighter, smoother-looking package. This improved appearance is a real advantage in the package goods field, where so much depends upon "eye value."

Improving Packages — Lowering Costs

Our wide experience in working with leading package goods manufacturers enables us to be of real assistance in devising attractive and economical forms of wrapping. If you are seeking a better-looking package, lower costs, or better protection for your product, it will pay you to consult us.

Wrapping Materials Used

Our machines are adaptable to practically every form of wrapping material—plain paper, printed paper, glassine, Cellophane, waxed-paper and foil.



PACKAGE MACHINERY COMPANY

Over 150 Million Packages per day are wrapped on our Machines

Machines for New Products

When introducing a new product, important economies in wrapping materials and methods can often be made by consulting us in the early stages of the work. A slight difference in shape or size, for example, may mean thousands of dollars saved in a year's production.

Dependable Service

Our machines are built for years of service. Many of them have been in use for over 20 years. Each machine is thoroughly tested before it leaves our factory and is guaranteed to operate as described.

Expert service men of the Package Machinery Company are always available for service in every part of the country.

Machine Bundling

Large Savings in Packing Costs

Large savings are made by bundling packages in tough paper instead of packing in expensive cardboard containers. Numbers of manufacturers adopted machine bundling almost as soon as they learned about it—The National Biscuit Company, Bristol-Myers (Ipana Tooth Paste), American Tobacco Company, Norwich Pharmacal Company (Unguentine), Diamond Match Company, Royal Baking Powder Company are all users of our bundling machines.

Machine bundling eliminates the cardboard container; this immediately produces a saving of 60 per cent on material. Each machine also saves from $2000 to $5000 a year in labor. And the paper wrapper, being much lighter than cardboard, makes a saving in transportation. Where the buyer pays the freight charges, this becomes a selling advantage.

The cartons can be fed to the bundling machine automatically from a cartoning machine. Working at full capacity, one bundling machine will take care of the output of at least two cartoning machines. The machine bundles a dozen cartons in three tiers of four packages each; in two rows of six each; or in one row of twelve each. It will also bundle six packages. See illustration above.

Machine bundling is suitable for tooth paste, shaving cream, gelatine, crackers, tobacco, cigarettes, toilet goods, matches and many other products.

Either plain or printed wrappers can be used, the machine registering the panels perfectly. It also attaches printed end-seals.

Merchandising Advantages of Machine Bundling

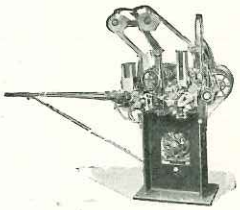
Machine bundling makes it possible to economically fill the demand of retailers for small lots of one dozen or half-dozen packages. Particularly desirable for chain store units.

Look into these Savings

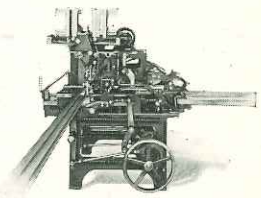
Find out how much machine bundling will save on your packing costs. Send us a dozen of your packages and we will return them to you showing how our machine would bundle them. We will also give you cost figures to compare with your present costs. Get in touch with our nearest office.

Write for Catalog

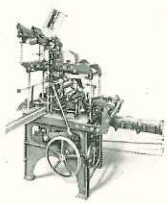
Our catalog will give you a better idea of the work done by our machines. If you have any special problem, or if you cannot find a machine in the catalog to fill your needs, get in touch with our nearest office; we will be glad to assist you.



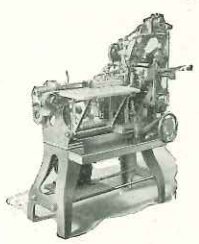
Model AC
Wraps chewing gum complete — 500 sticks per minute



Model S
Wraps fine toilet soap in inner and outer wrapper —150 per minute

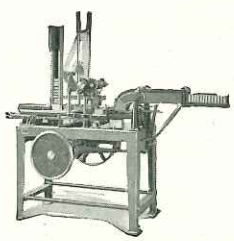


Model N4
Wraps laundry soap in inner and outer wrapper —120 per minute

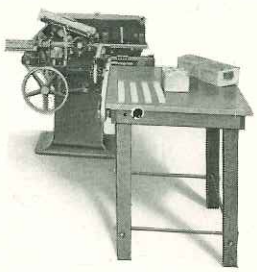


Model AF
Cuts and wraps Fleischmann's Yeast in foil applying sticker—100 per minute

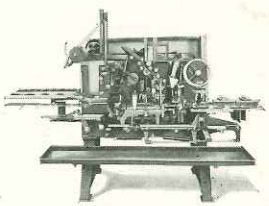
Model K
Shapes, cuts and wraps kisses or toffee, doing all three operations—150 per minute



Model AA
Wraps cigarette and other small packages in transparent glassine paper—65 per minute



Model HY
Wraps individual lumps of sugar in printed wrappers—100 per minute



Model C
Wraps chocolate bars in inner and outer wrapper—90 per minute

PETERS MACHINERY COMPANY

GENERAL OFFICE AND FACTORY 4700 RAVENSWOOD AVE

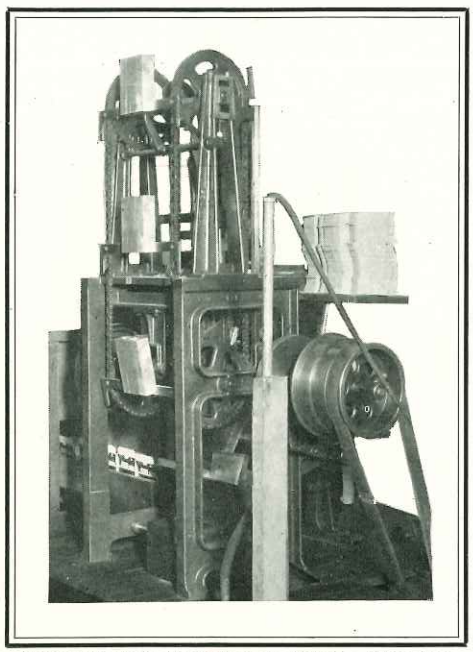
CHICAGO.U.S.A

PRODUCTS:

Package Forming and Lining Machines, Package Folding and Closing Machines, Package Wrapping and Labeling Machines and other special automatic equipment for peculiar Packaging Problems.

PETERS PACKAGE FORMING AND LINING MACHINE:

The Forming and Lining Machine takes the carton blank and a superimposed sheet of paraffine, parchment or other protective paper suitable for the goods to be packed and simultaneously forms them into an open receptacle, interfolding the lining with the flaps so that they become an integral part of each other and locks the tucking flaps into place. This forms a smoothly lined receptacle without any projecting edges or folds so that the contents may be readily inserted and without any disarrangement of the protective lining. Further, the lining, by reason of the peculiar interfolding, is so interlocked with the flaps of the carton that it can be withdrawn from the carton. There is no paste, glue, or other adhesive used in the assembling of this receptacle.



Peters Package Forming and Lining Machine

The machine is equipped with three-step cone pulley for belt drive or direct drive equipment, including motor. The speed of the machine may be varied to meet the requirements of the filling or packing operations, and a conveyor drive pulley is made an integral part so that the cartons can be conveyed by canvas belt to any desired location.

This machine will replace from five to seven hand operators and effects an annual saving of about $3500.00.

Forms and lines 40 packages per minute. Requires but one operator. Weight, 1000 pounds; floor space, 4′ x 4′. One-quarter horsepower to drive.

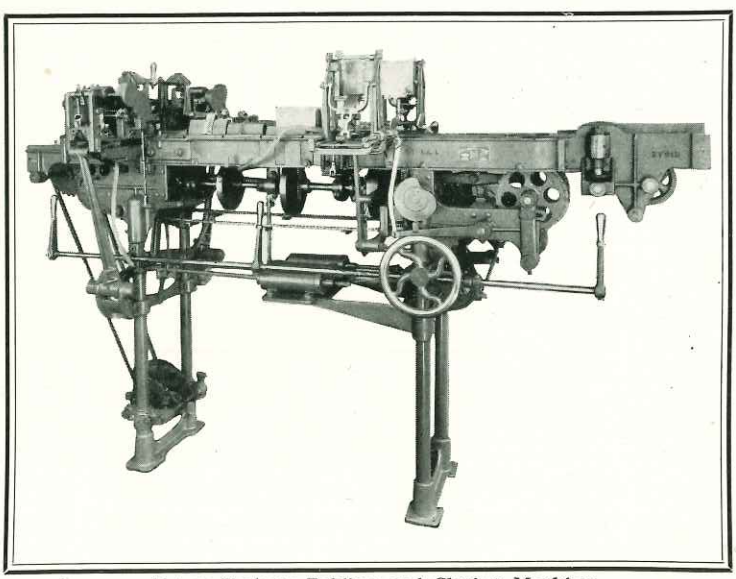
PETERS PACKAGE FOLDING AND CLOSING MACHINE:

The package, after being filled either by hand or, where the nature of the goods warrants, by a filling machine, is now ready to be folded and closed on this machine. Our automatic filling machine is not shown on this page, due to the variety of construction depending on the different articles to be packed. The folding machine takes the filled but unclosed package and automatically folds the up-standing portions of the lining and carton so that the goods are completely enveloped by the lining, then closes down the cover and inserts the front flap, making a rigid and firm package.

The machine is entirely automatic and does not require an operator, but we have found it desirable that the inspector be stationed at this machine to see that the packages are properly and neatly filled. The inspector does not need to touch the machine, however.

If desired, an attachment can be furnished to place an advertising slip or other printed matter into the package before the cover is closed down.

Where no outside wrapper is required and the carton itself is printed or lithographed, a Sealing Attachment can be furnished to place a seal of any desired size across the edge of the package so that it cannot be opened without destroying such seal.



Peters Package Folding and Closing Machine

We also build a duplex folding and closing machine, having double the capacity of the single. The single machine replaces from five to seven hand operators and effects an annual saving of about $3500.00.

Folds and closes 40 packages per minute. One operator (optional). Weight 1000 pounds. Floor space required, 2′x6′. One-quarter horsepower to drive.

TRAUTMANN, BAILEY & BLAMPEY

CAR CARDS - CUT OUTS - BOOKLETS - ADVERTISING DISPLAYS - PROCESS OFFSET PRINTING

COLOR & OFFSET LITHOGRAPHERS

13 Laight Street, New York

FANCY FLORAL AND HOLIDAY PAPERS - LABELS - DRY GOODS TICKETS - BOX WRAPS

ART PAPER AND BOX-WRAP DEPARTMENT

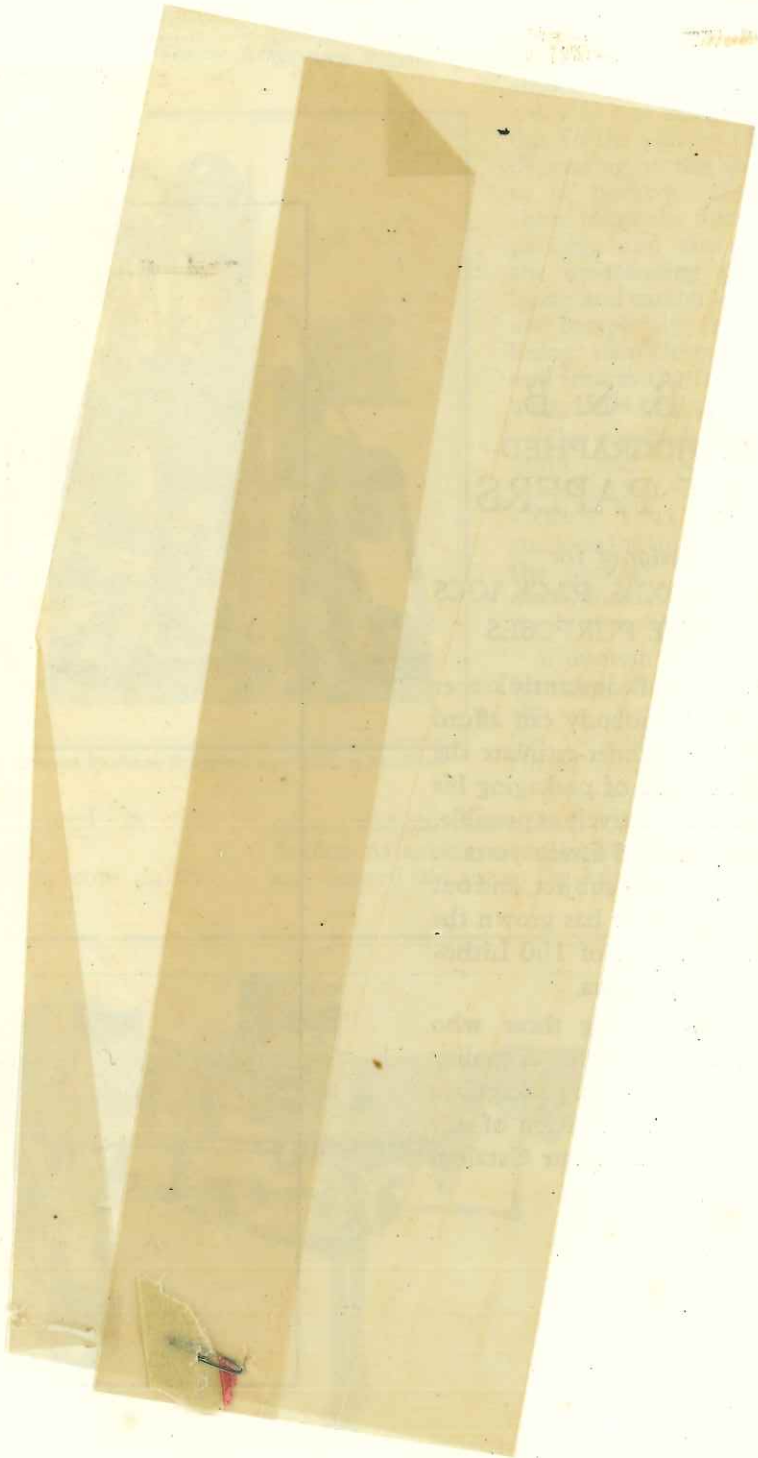
T. B. & B.
LITHOGRAPHED
ART PAPERS

Designed for
PAPER BOXES, PACKAGES
and ART PURPOSES

In these days of constantly keener competition, nobody can afford to ignore or under-estimate the importance of packaging his product as attractively as possible. We have devoted fifteen years to the study of this subject, and out of our experience has grown the T. B. & B. Line of 100 Lithographed Art Papers.

If you are among those who have goods to sell, of a quality that rates a first-class package, we invite your investigation of our Line as shown in our Catalog.

MEMBER OF

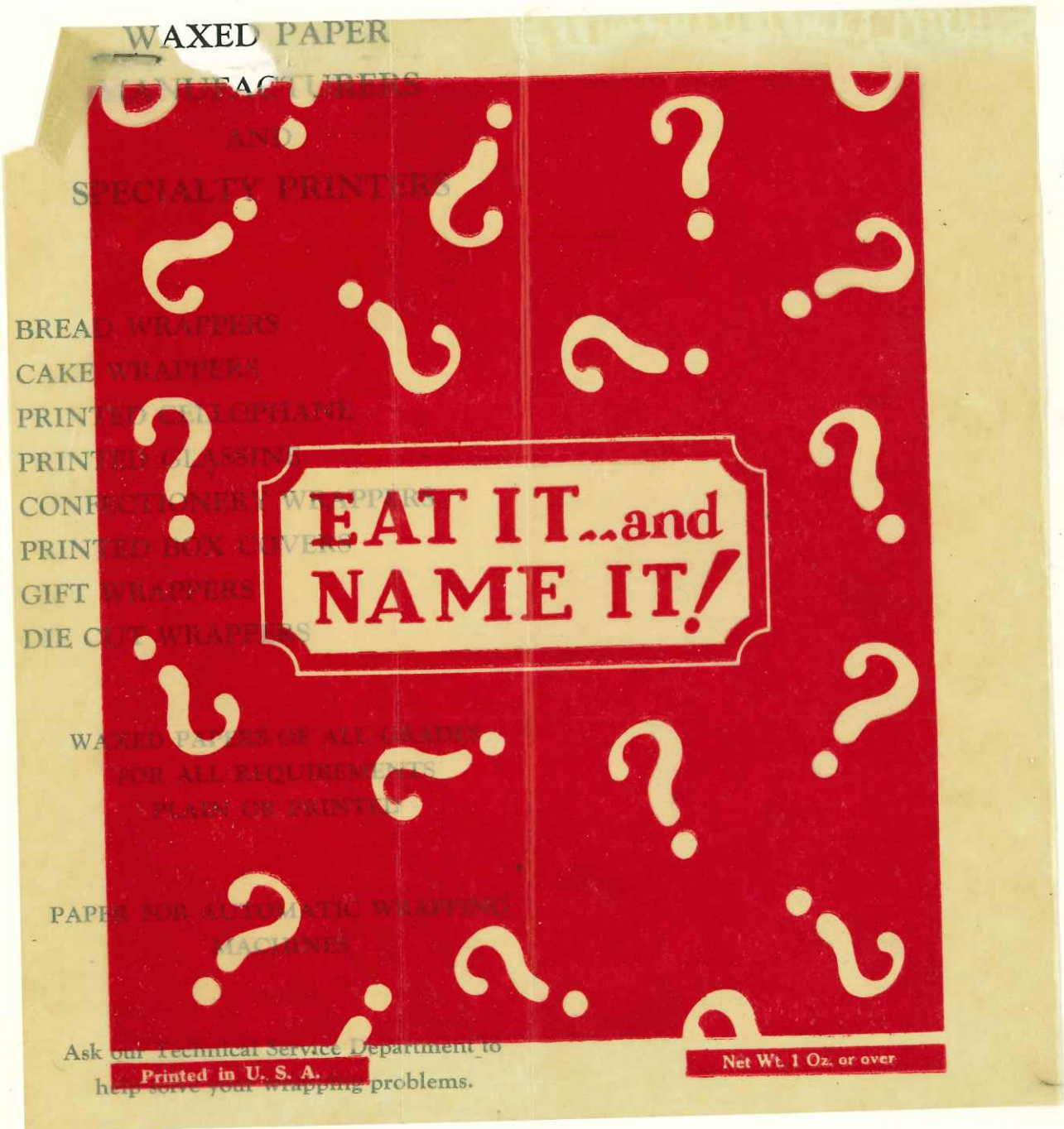


PACKAGE PAPER COMPANY

HOLYOKE, MASS.

SALES OFFICES

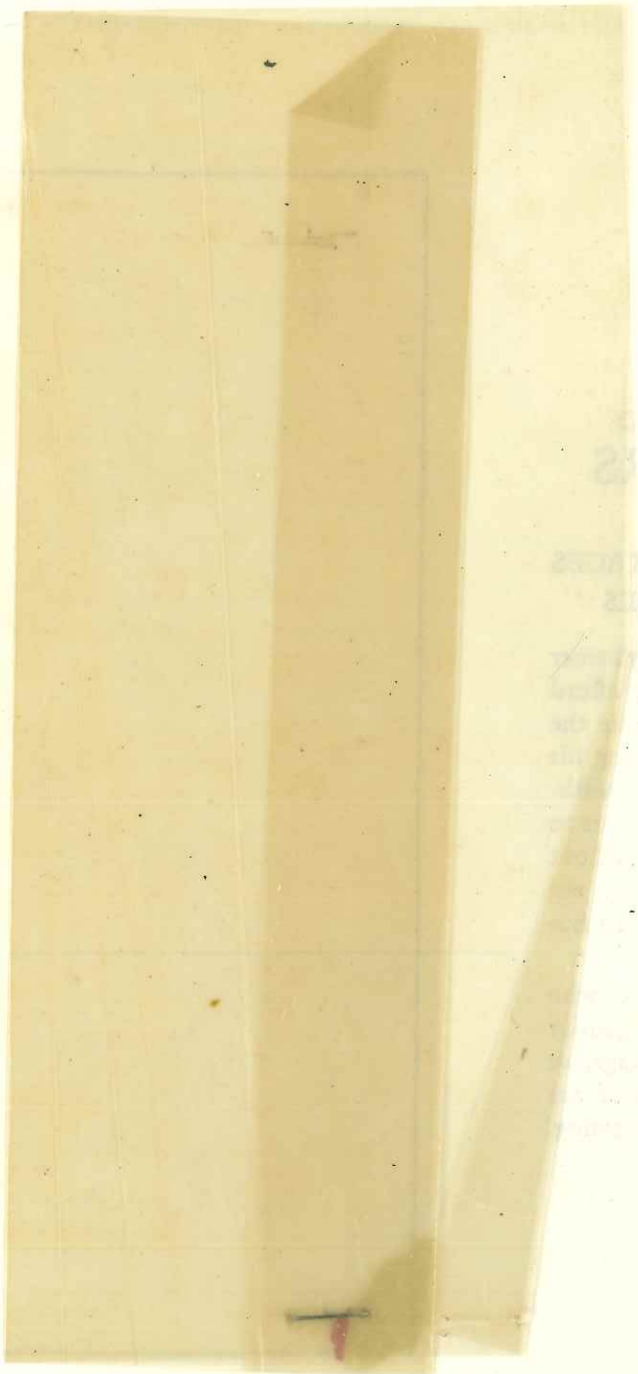
New York: 30 Church St.
Philadelphia: Bulletin Bldg.
Chicago: 111 W. Washington St.
Boston: 10 High St.
Baltimore: 125 E. Baltimore St.
Rochester, N. Y., Rochester Theatre Bldg.
Atlanta, Ga., 285 Ivy St., N. E.



Write to Nearest Sales Office

or

Package Paper Company
Holyoke, Mass.



PACKAGE PAPER COMPANY

HOLYOKE, MASS.

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New York: 30 Church St.
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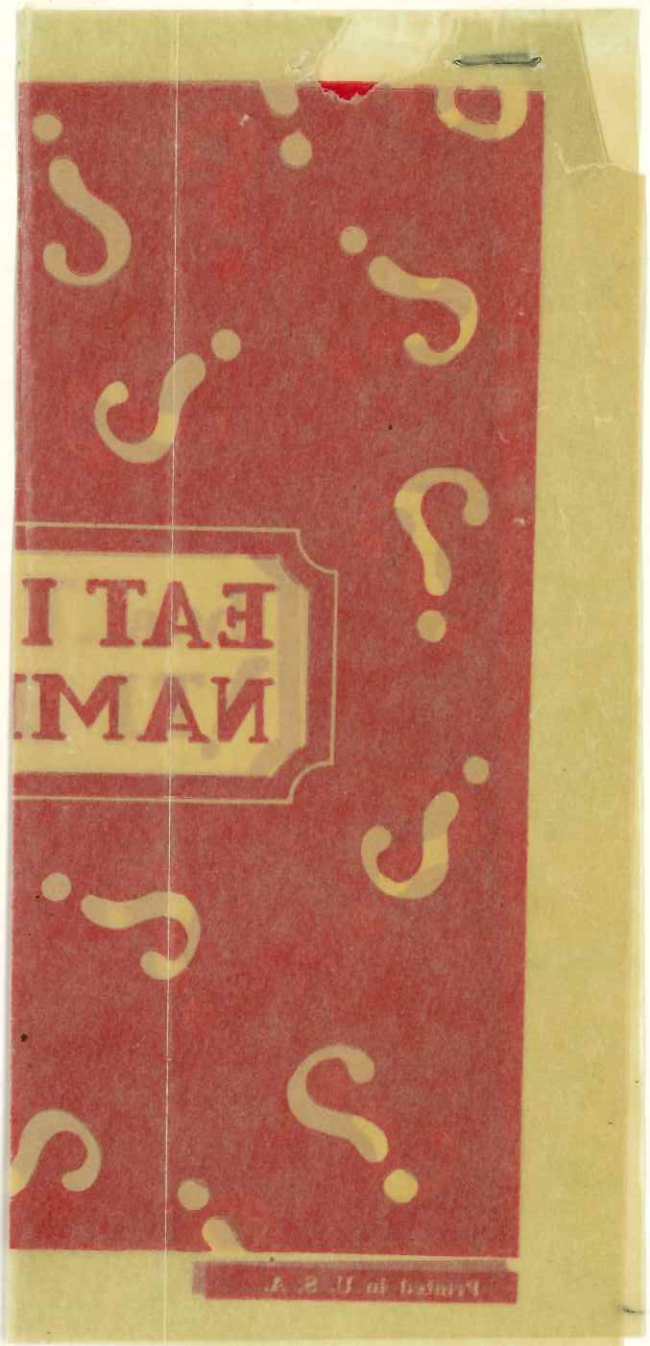
Boston: 10 High St.
Baltimore: 125 E. Baltimore St.
Rochester, N. Y., Rochester Theatre Bldg.
Atlanta, Ga., 285 Ivy St., N. E.

WAXED PAPER MANUFACTURERS AND SPECIALTY PRINTERS



BREAD WRAPPERS
CAKE WRAPPERS
PRINTED CELLOPHANE
PRINTED GLASSINE
CONFECTIONERY WRAPPERS
PRINTED BOX COVERS
GIFT WRAPPERS
DIE CUT WRAPPERS

WAXED PAPERS OF ALL GRADES
FOR ALL REQUIREMENTS
PLAIN OR PRINTED

PAPER FOR AUTOMATIC WRAPPING MACHINES

Ask our Technical Service Department to help solve your wrapping problems.

Write to Nearest Sales Office
or
Package Paper Company
Holyoke, Mass.

QUALITY PAPER BOXES

THE quality box is, and will always be, the solid box. Only the solid, set-up box can retain that brand new appearance all the way from the box maker to the ultimate consumer.

It is for this reason that prominent manufacturers of confectionery, chewing gum, food products and other nationally advertised commodities . . . . employ the solid box as their best sales help.

And the most prominent, among them, of course, use solid boxes made by the A. D. Shoup Co., Inc., organization.

A. D. SHOUP CO., INC.

86—34th St.
BROOKLYN, N.Y.

SEFTON BOXES

Make Them Buy!

YOUR carton and display boxes can be real factors in making the consumer buy your product. They must do everything a salesman should do—and the better they do it the greater your sales will be.

Sefton knows how to create package designs that will make the public buy. We have proved this fact many times with hundreds of different products. You can have the benefit of this wide experience without the least obligation. Write and we will show you the way to increased sales.

SEFTON MANUFACTURING CORPORATION

General Offices: 59 East Madison Street, Chicago

Factory Locations: Chicago, Illinois; Brooklyn, New York; Anderson, Indiana

SEFTON

SEFTON BOXES

Better Protection—Lower Costs!

SEFTON Shipping Containers actually make you money. They reduce breakage losses—lower handling expenses and cost no more than ordinary containers.

We will prove these facts right in your own shipping room with your own product. Our engineers will build containers particularly designed to overcome your problems. These will be given any test you care to demand. Then, you will know why so many leading manufacturers use Sefton Shipping Containers.

Remember this means money to you—write us today!

SEFTON MANUFACTURING CORPORATION

General Offices: 59 East Madison Street, Chicago

Factory Locations: Chicago, Illinois; Brooklyn, New York; Anderson, Indiana

SEFTON

A BY-WORD OF EXCELLENCE

THE quality of embossing is a component of two factors . . . workmanship and materials. By giving them the utmost excellence in materials the house of Rauskolb has, for years, enabled farsighted box makers to concentrate upon the workmanship of their product.

It is this adherence to the highest standards in the manufacture of pure gold leaf, patent sized gold leaf, imitation gold, bronze and flat colors which has made the Rauskolb "Arm and Hammer" a by-word of excellence among the industry's leaders . . . and those who will soon be leaders.

F.W. RAUSKOLB CO.

TRADE MARK

16 FRANKLIN STREET
MEDFORD, MASS.

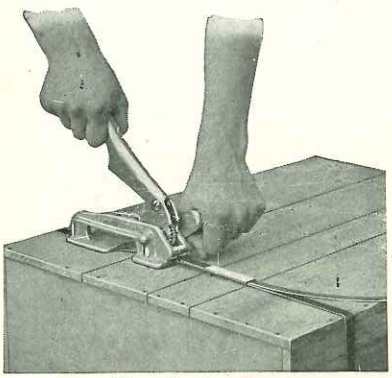
SIGNODE STEEL STRAPPING COMPANY

2628 North Western Avenue, Chicago, Ill.

Branch Offices: Boston, New York, Philadelphia, San Francisco, Detroit, Greensboro, N. C., New Orleans, St. Louis, Minneapolis

Tensional Steel Strapping Equipment, Automatic Wire Tying Machines and Shipping Room Supplies

Send for complete catalog No. C-16



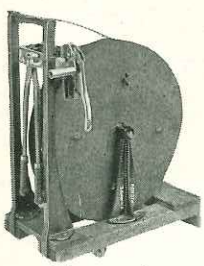
Signode stretcher

The Signode System of package reinforcement is a method of tightly encircling a shipment with bands of steel and securely sealing the overlapping ends with a metal sleeve called a Signode. This reinforcement greatly strengthens containers, permitting safe use of lighter, less expensive lumber which saves freight. The steel bands keep shipments free from damage, reduce claims and losses, and prevent pilfering.

Tools are available for any size strapping—a stretcher to tighten the band and a sealer to crimp the strap ends within the Signode. Seals are made in both single and double crimp sizes for all widths of band, depending on the work required.

Your own trade mark may be lithographed on the seals—a very effective advertising medium and insurance against lost shipments.

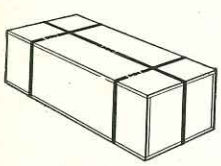
Trade-marked Signode



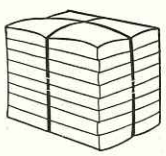
Floor reel

Strapping is fed from an easily transported floor reel, or if preferred, from a reel hung overhead.

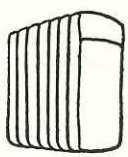
Signode is easily and quickly applied to most every type of shipment, from small parcel post and express packages to great bundles of steel sheets. It reinforces boxes, crates, cartons, etc., and is a secure binding for bales and bundles of many kinds.



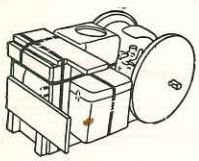
Wooden box



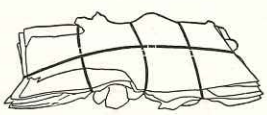
Bundled books or magazines



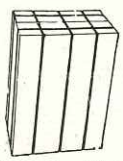
Baled goods



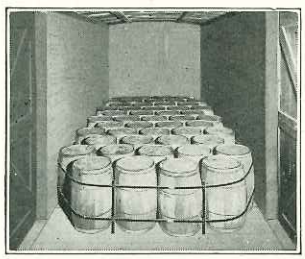
Partial crate



Bundle of irregular shapes



Oversize fibre carton

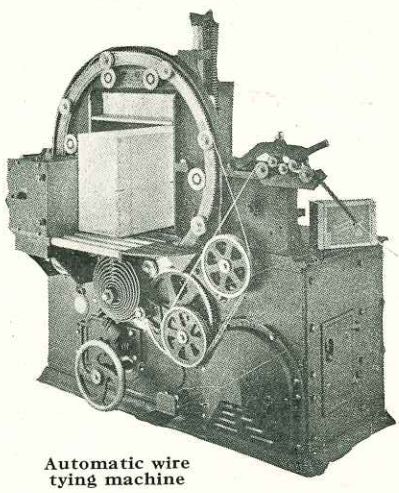


Typical car of barrels

Various commodities shipped in carloads are bundled together in bulk by Signode strapping. Carloading by this means, instead of slow, costly wood blocking, is increasing with worthwhile savings for both shipper and railroad.

Power sealers and stretchers can be provided for heavier sizes of strap where compressed air is available.

Automatic wire tying machinery is also available where mass production necessitates rapid tying of packages.

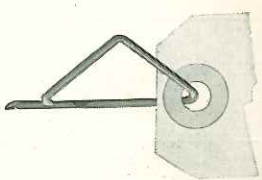


Automatic wire tying machine

We also manufacture all kinds of nailed-on strapping in plain or embossed styles, and Loop-the-Loop round wire reinforcement. Pail Clasps, Tag Fasteners and Corner Irons complete the line.

Loop-the-Loop wire joint

Apex corner iron



Apex tag fastener

If you have a shipping problem, put it up to Signode. We advocate no particular type or kind of shipment, but will help you make the most of what you have. Ask for demonstration or write today for catalog No. 16 C.

Coverings and Linings
WITH A COLORFUL PUNCH

Box coverings that are new and colorful .... coverings to dress your package in gay style, rich splendor or mellow beauty .... hundreds of them and sold thru the Chas. W. Williams Co. 303 La Fayette St., New York City.

These papers are also made in envelope lining weight. The manufacturing stationer will find many designs particularly suited to his use.

SAMPLES GLADLY SUPPLIED

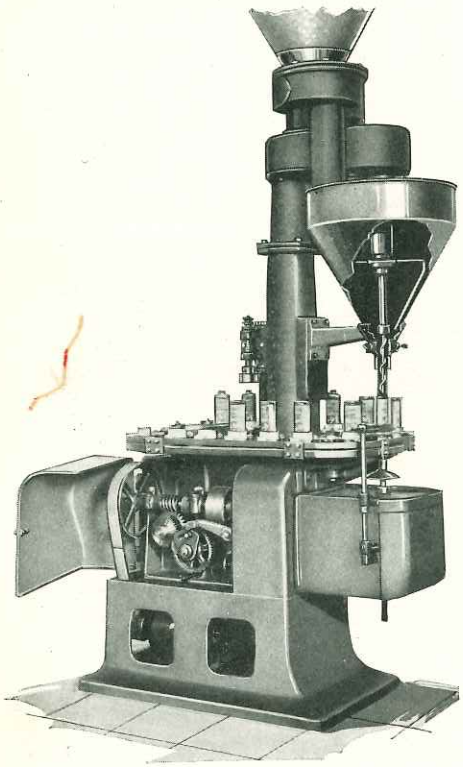
The Tuttle Press Co.

APPLETON. WISCONSIN

F. J. STOKES MACHINE COMPANY

COLLAPSIBLE TUBE, JAR AND
POWDER FILLING EQUIPMENT

5990 Tabor Road, Olney P. O.
PHILADELPHIA, PA.



PRODUCTS

Powder Fillers — Conveyors
Jar Fillers — Bottle Washers
Tube Fillers, Closers and Clippers
Special Filling Machines

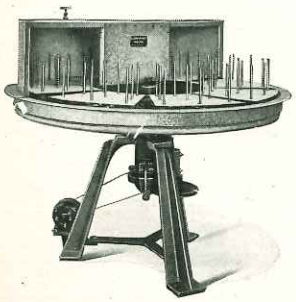
Modern Packaging Equipment designed and built by us is the result of over twenty years' experience in this field. We have solved many problems of our customers by designing a special machine or modifying a stock machine to answer their needs. Our advice is always available.

Samples of materials to be packaged and full information as to desired production, available power, etc., should be furnished us. Descriptive booklets available on request.

POWDER FILLING EQUIPMENT

For filling practically any powdered product in tins, bottles, boxes, cartons, etc. Semi-automatic and automatic models. Fill accurately without spilling the powder or soiling the container.

The new model illustrated is fully automatic and equipped with attachments which make it ideal for production work on a variety of products. It has an overhead attachment; a container feed; a "no can—no fill" control; a capping attachment, and is easily changed over for different containers and materials. Capacity, 25 to 40 containers per minute.



BOTTLE WASHERS

For washing bottles up to one gallon size. Easily adjusted for different size bottles. Capacity up to one gross per minute.

JAR AND CAN FILLERS

For filling jars, bottles and tins with creams, pastes, etc. Fills accurately and without spattering. Exceptionally easy to clean. Capacity, 25 to 40 jars per minute.

TUBE FILLING EQUIPMENT

For filling collapsible tubes with toilet preparations, drugs, chemicals, paints, foods, etc., etc. Creams, pastes, liquids and semi-liquids are packaged accurately and cleanly either by using a stock STOKES machine with attachments to suit the requirements of the material, or a machine designed especially to handle the particular product. A complete line of semi-automatic and hand operated machines is also available.

The new model illustrated is a full-automatic filling, closing, clip-making and attaching machine for filling semi-liquids and pastes in tubes of different sizes. One operator only is needed whose wages are usually saved by the patented clip-forming mechanism alone. A production machine which because of its ease of "change over" is ideal for the large manufacturer. Capacity, 30 to 50 tubes per minute.

SPECIAL MACHINES

Special filling machines are designed and built by us to meet the customer's need. Illustrated here are two such machines, one (right) developed to handle automatically liquids or semi-liquids at high temperatures, the other to fill pint size tubes.

CONVEYORS

For facilitating assembling and finishing operations. Width of belt and work tables can be adjusted to suit individual requirements. Stock sections 8 ft. long. Extra sections easily inserted.

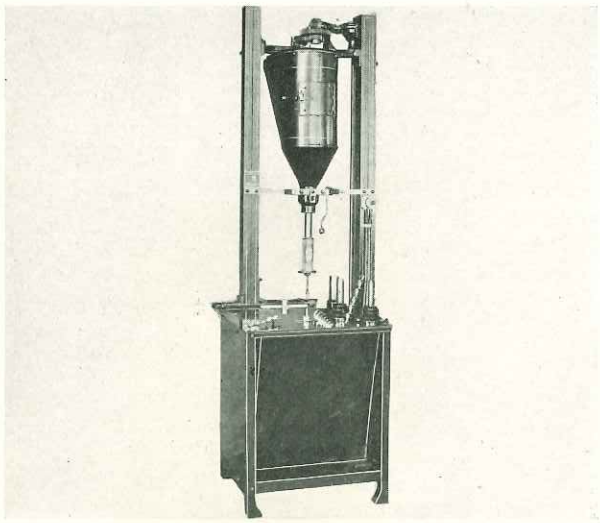
STOKES & SMITH CO.

PACKAGING MACHINERY

FRANKFORD, PHILADELPHIA, U. S. A.

On the Pacific Coast:
Mailler Searles Inc.,
135 Fremont St.,
San Francisco, Cal.

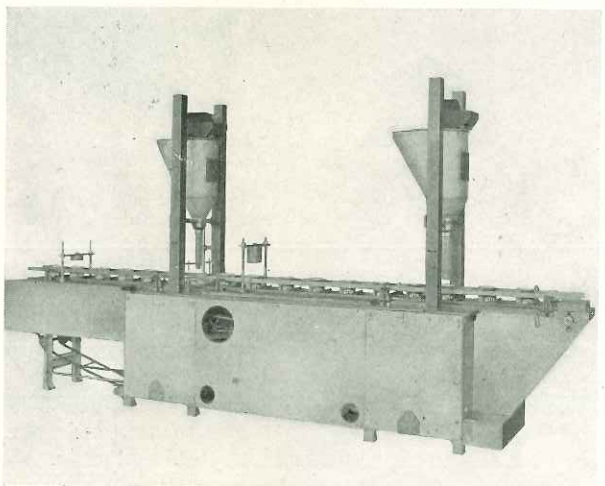
For Europe:
Stokes & Smith Co.,
23 Goswell Road,
London, Eng.



American Universal Filling Machine

AMERICAN UNIVERSAL FILLING MACHINE:

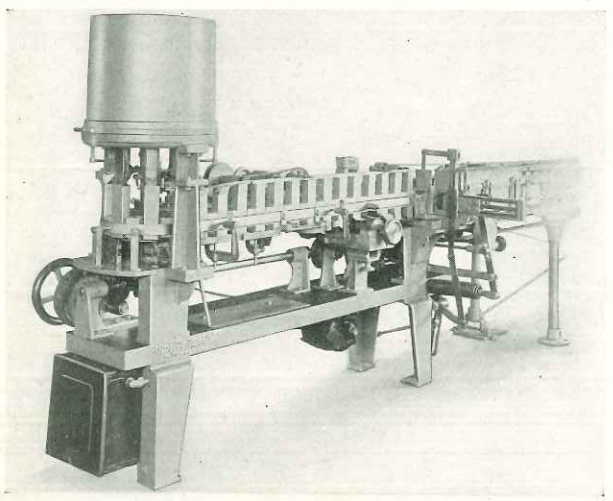
For filling all kinds of powdered materials, pastes, etc., into cans, bottles, jars, bags, boxes. One operator—15 to 25 per minute. Capacity, ½ oz. up to 5 lbs. This machine can be used as a gross weight scale, or to measure the material by volume, or to pack it into the containers as tightly or as loosely as desired. This machine can also be furnished with Automatic Conveyor and Capping Device. Production 30 to 40 per minute. A truly universal machine.



Automatic Double Unit Filler for Powdered Materials

AUTOMATIC DOUBLE UNIT FILLING MACHINE:

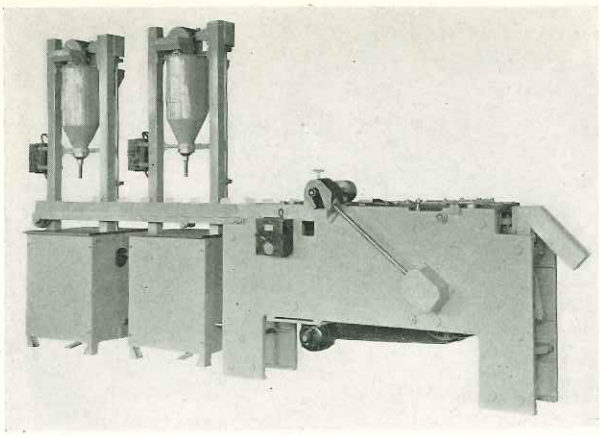
For powdered materials, filling into cans, bags, cartons, etc. Packing or measuring the bulk load at the first station, dribble weighing at the second station. Entirely automatic. Operator places empty containers on the intake conveyor—capacity ½ lb. up to 5 lbs. Production 20 to 30 per minute.



Automatic Carton Filling and Sealing Machine

"NEVERSTOP" CARTON FILLING AND SEALING MACHINE:

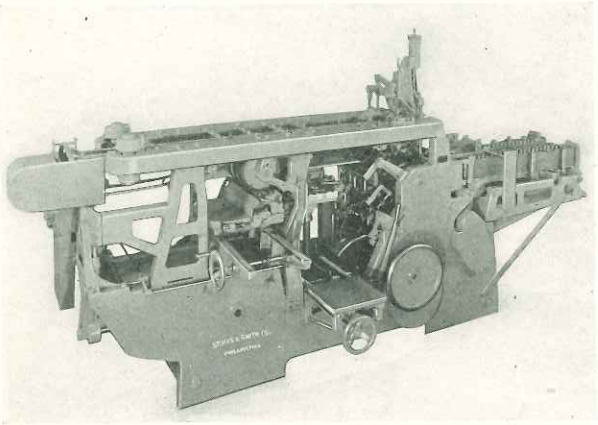
For various products such as jelly powder, soap powder, cereals, etc. Automatically feeds the cartons, bottom seals them, fills, and top seals. Production 60 to 70 per minute. Made in several models to suit various sizes of carton.



Bag and Envelope Sealing Machine

AUTOMATIC BAG AND ENVELOPE SEALING MACHINE:

Particularly well suited for envelopes of Chocolate Powders, Dessert Powders, Seeds, etc. This machine automatically glues and seals the flaps of the envelopes after they are filled on S & S Filling Machines, or other hand-fed machines. Operator of the Filling Machine places the filled envelope in the conveyor of Sealing Machine. Capacity up to 80 sealed envelopes per minute. Easily adjusted for a wide range of sizes.



Automatic Tight Wrapping Machine

AUTOMATIC TIGHT-WRAPPING MACHINE:

For tight-wrapping square and rectangular cartons after they are filled, making a sift-proof, weevil-proof package for all kinds of food and grocery products. This machine will connect with any make of Carton Filling and Sealing Machine. The Automatic Machine production 60 to 70 per minute—Semi-Automatic Hand Fed Machine 15 to 20 per minute.

You cannot overlook this complete service.

We can furnish packaging or filling machines to handle practically any kind of material.

FILLING MACHINES
CARTON TOP and BOTTOM SEALERS
GROSS or NET WEIGHT SCALES
ENVELOPE SEALERS
CARTON FILLING and SEALING MACHINES
TIGHT WRAPPING MACHINES

Speeds at from 15 to 70 per minute.

Whenever you consider packaging machinery, investigate the complete service and broad experience offered by Stokes & Smith.

STOKES & SMITH COMPANY

PACKAGING MACHINERY

FRANKFORD, PHILADELPHIA, U. S. A.

LONDON OFFICE—23 GOSWELL RD.

Specialists in the packaging field.

As specialists for 15 years in papers pertaining to package work, we are in a position to furnish such papers with speed accuracy and satisfaction. Some of our products are listed below—

SWEETONE
SWEETNAM
PRODUCTS

Wattolyn (Candy Padding)	Chocolate Dividers	Dipping Papers
Globular Parchment	Box Partitions	Cover Papers
Corrugated Parchment	Box Liners	Special Wrappings
Waxed Layer Board	Shredded Packing Materials	Tinsel Ribbons
Chocolate Board	Glassine (Plain and Embossed)	Gold Cord
	Wax Papers	Tissues
		Fancy Papers

We maintain a complete department for dieing out to fancy shapes, cutting to various sizes and embossing of all descriptions. This department can be of inestimable service to you. A trial will convince you of this fact.

All inquiries will receive careful and immediate attention.

Samples and Prices on Request.

Sweetone Products Are Best

GEORGE H. SWEETNAM INC.

282-286 PORTLAND ST., CAMBRIDGE, MASS.

ANNOUNCEMENT

• • • • •

We have received so many inquiries from our customers and friends asking when we will be able to supply transparent cellulose sheets from our new plant that we deem it advisable to make a general announcement in this issue of PACKAGING CATALOG.

Construction of our new plant at Fredericksburg, Virginia, is progressing rapidly and we expect to be in full operation sometime during the coming Spring. Meanwhile our ability to import the present grades of

GREASE-PROOF FENESTRA

permits us to rush the completion of the first unit for the production of our

MOISTURE-PROOF FENESTRA

under a new process of our own, which we hope will be available to our customers in February.

Until our new plant is able to supply all demands of our customers we will of course continue the importation and sale of FENESTRA made in Belgium in keeping with our recent announcement of having acquired the business of Messrs. Birn & Wachenheim.

SYLVANIA INDUSTRIAL CORPORATION

GENERAL OFFICES:	122 EAST FORTY-SECOND ST. NEW YORK CITY
WORKS:	FREDERICKSBURG, VIRGINIA
NEW YORK SALES:	121 WEST SEVENTEENTH ST. NEW YORK CITY

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SWEETNAM
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- Globular Parchment
- Corrugated Parchment
- Waxed Layer Board
- Chocolate Board
- Chocolate Dividers
- Box Partitions
- Box Liners
- Shredded Packing Materials
- Glassine (Plain and Embossed)
- Wax Papers
- Dipping Papers
- Cover Papers
- Special Wrappings
- Tinsel Ribbons
- Gold Cord
- Tissues
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WORKS:	FREDERICKSBURG, VIRGINIA
NEW YORK SALES:	121 WEST SEVENTEENTH ST. NEW YORK CITY

"Do you mean to tell me that those are paper bags?"

A UNION special paper package, in its finished state—filled and sealed, and displayed on shelf or show-case—*can* be so neat and striking that we occasionally hear this amazed question from an executive who has never had occasion to observe the paper bag in its highest stage of development.

For more than a generation—without the slightest intention of disguise—Union Special and Fancy Bags have been winning consumer-favor as real packages . . . *and with gratifying economy for the packer.*

TRADE MARK UNION

UNION BAG & PAPER CORPORATION

Manufacturers of Wrapping Paper, Paper Bags & Paper Sacks

GENERAL OFFICES ▪ WOOLWORTH BUILDING ▪ NEW YORK, N. Y.

UNION Sales Representatives are trained craftsmen in package-building. Each will honestly find out whether or not a given job can be satisfactorily done by a paper bag.

KARL PAULI CORPORATION

454 BROOME STREET

NEW • YORK

Greatest Stock Ever Carried in This Country of

GOLD AND SILVER PAPERS

in all grades and varieties, so much used now for modern boxes, labels and displays.

Gold and Silver shades blend with color work harmoniously and create a breath of subdued richness, distinction and finish.

10	Aluminum Leaf Paper
25 S-75	Half Fine Gold Paper
44 S-60	
45 S-60	Aluminum Coated Metal Paper
46 S-60	
47 S-60	
19 Embossed 5	Half Fine Gold Paper in different embossings

TELEPHONES
CANAL 1402
CANAL 0828

Karl Pauli Corporation
454 BROOME STREET
New York

CABLE ADDRESS
PAULICO
CODE
A-B-C- 5TH EDITION
AND 6TH "

New York, February 1, 1930

Gentlemen:

Please send your inquiries for:

GOLD AND SILVER PAPER - Bronze or Leaf covered plain or embossed

ALUMINUM COATED METAL PAPER - Silver, Gold or Colors, Plain or embossed

NATURE PAPERS - In five shades plain or embossed

VELOUR PAPERS - In all shades plain or embossed

MOTHER-OF-PEARL PAPER - Plain or embossed

and oblige

Yours very truly,

KARL PAULI CORPORATION
454 Broome Street
New York City

U. S. BOTTLERS MACHINERY CO.

EXECUTIVE OFFICES AND FACTORY

4015-31 N. ROCKWELL ST., CHICAGO, ILLINOIS

New York — BRANCHES IN ALL PRINCIPAL CITIES — San Francisco

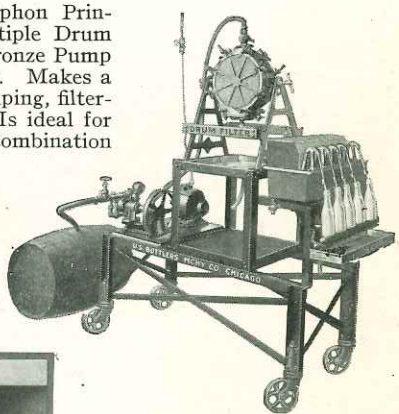
"Our Equipment Produces
MORE OUTPUT WITH LESS LABOR"

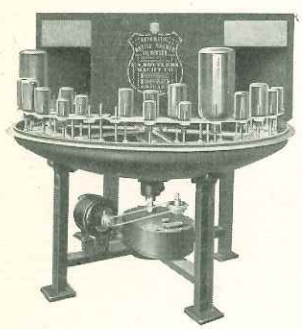
MANUFACTURERS OF

Cappers	Pasteurizers
Conveyors	Preheaters
Corkers	Rinsers
Dryers	Sterilizers
Fillers	Tanks
Filters	Washers

U. S. COMBINATION OUTFIT NO. 4

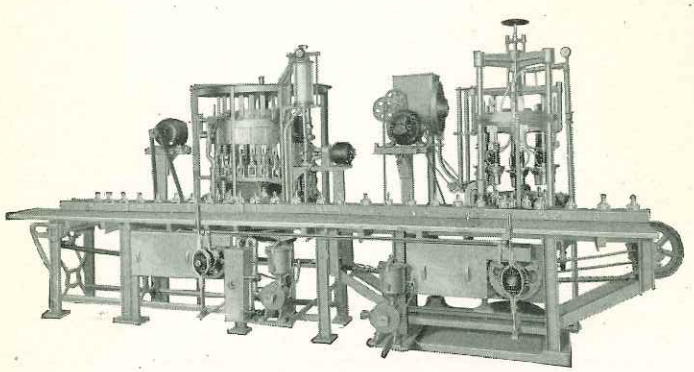
Consists of U. S. Siphon Principle Filler, U. S. Multiple Drum Disc Filter and U. S. Bronze Pump belted to electric motor. Makes a complete, compact, pumping, filtering and filling outfit. Is ideal for free-flowing products. Combination outfits can be obtained in two sizes and several different combinations. All of the individual units can be obtained separately, if so desired.





U. S. REVOLVING WASHING, RINSING AND STERILIZING MACHINE

Has a capacity of from 60 to 120 bottles per minute depending on size, style and shape. Ideal for either cans or bottles. Fully automatic straight line washers can also be furnished for handling cans or bottles. Machines can be arranged to discharge automatically to either automatic fillers or automatic dryers, if so desired.

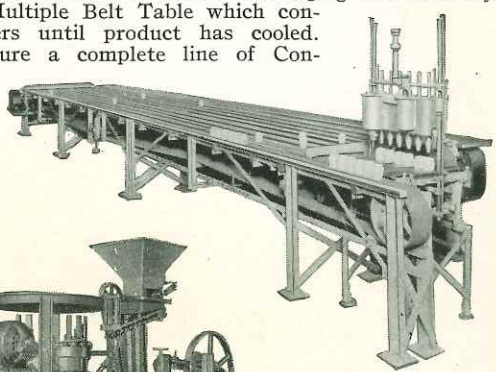


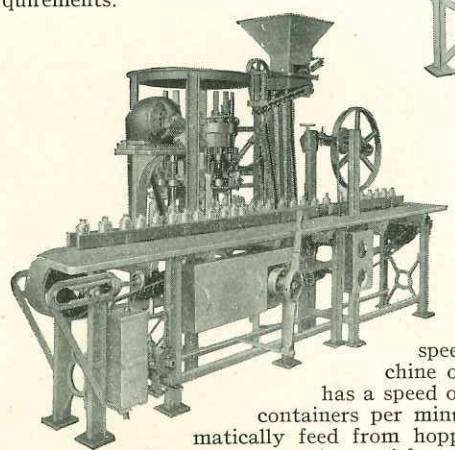
AUTOMATIC IDEAL ROTARY VACUUM FILLER AND HOPPER FEED CAPPER

A very satisfactory filling machine for all liquid products and most all semi-liquid products. These machines have a capacity of from 60 to 120 containers per minute and can be furnished to take care of practically any filling problem. If your problem is corking instead of capping, the U. S. Ideal Rotary Corker can be arranged to hook up to the discharge of the Filler in place of the Rotary Capper, as illustrated. We build a complete line of automatic machines to meet with your requirements. Write us for full particulars.

U. S. ACME OINTMENT FILLER AND COOLER CONVEYOR

For ointments, wax, cold creams and all products which are solid when cold and can be filled in a liquid or semi-liquid state when hot. The machine is shown discharging automatically to a U. S. Multiple Belt Table which conveys containers until product has cooled. We manufacture a complete line of Conveyors and would be glad to make recommendations regarding your requirements.



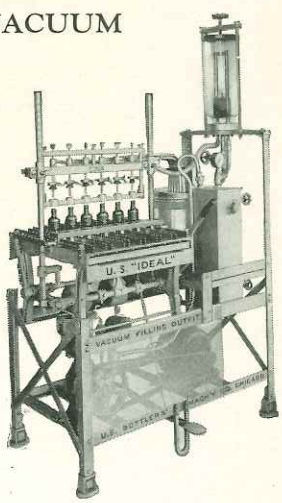


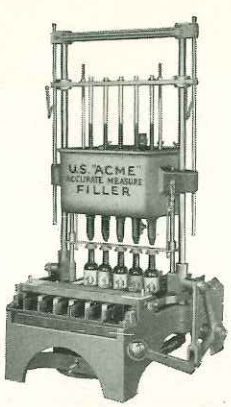
U. S. ROTARY CORKER

The only slow moving high-speed corking machine on the market. It has a speed of 60 to 120 corked containers per minute and will automatically feed from hopper either straight side or taper corks, satisfactorily driving same to desired depth, or flush with top of container.

U. S. STRAIGHT LINE VACUUM FILLER

Built in three sizes. Machine illustrated, semi-automatic, but can be arranged to discharge automatically to U. S. Capper or Corker Conveyor. Machine is an ideal unit for filling all types of liquid products and has a speed of 30 to 40 containers per minute. Same machine can be furnished with power feed and discharge, making it a fully automatic unit. We manufacture a complete line of Vacuum Fillers from the hand machine to the fully automatic rotaries and are glad to make recommendations to meet with your requirements.





U. S. ACME FILLER

An ideal machine for filling all types of products into containers requiring accurate quantities. Ideal for the filling of cans. This machine is obtainable in three sizes and can also be obtained in fully automatic types, with power feed if so desired. The machine to the left, of rubber construction, is ideal for handling products high in acetic content.

Send Us Sample Container and Products for Recommendations.

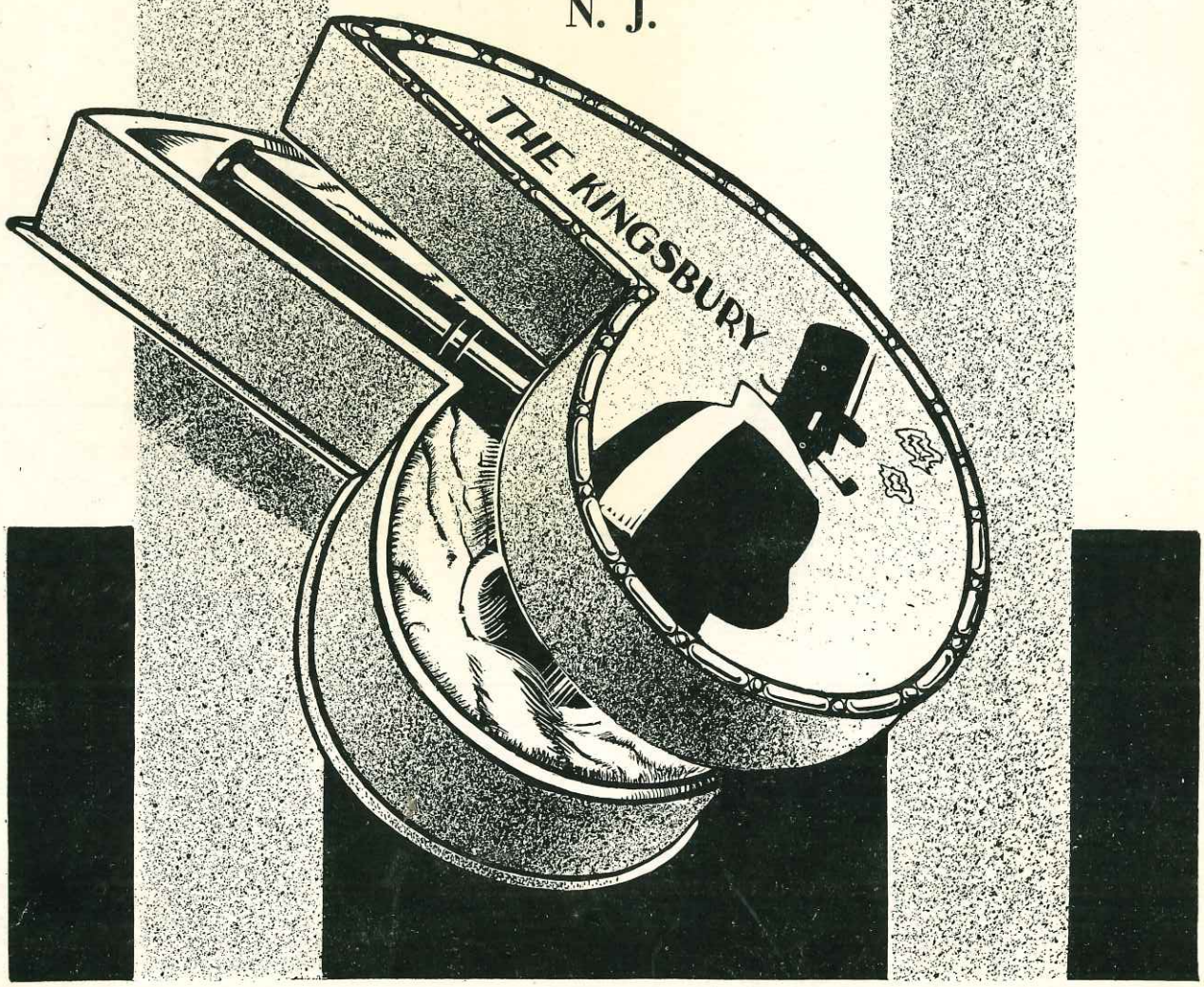
FINE BOXES

Made by hand-craftsmen
(not machine made)

for

Atomizers
Belts
Brushes
Buckles
Candies (fancy)
Cosmetics
Lighters
Necklaces
Pens and Pencils
Perfumes
Pipes
Stationery (fine)
Watches

KARL VOSS
CORPORATION
FIFTEENTH STREET
HOBOKEN
N. J.



Labels of Quality

We, as merchandising specialists will create and design a label for your package that has individuality and finesse, that not only will attract but will add prestige to your product as well.

Their Value!

Quality labels created and designed by Krause gives value by increased sales Prove it for yourself by having us originate your next label.

RICHARD·M·KRAUSE
INCORPORATED
304 EAST 23rd STREET
NEW YORK
BOSTON CHICAGO

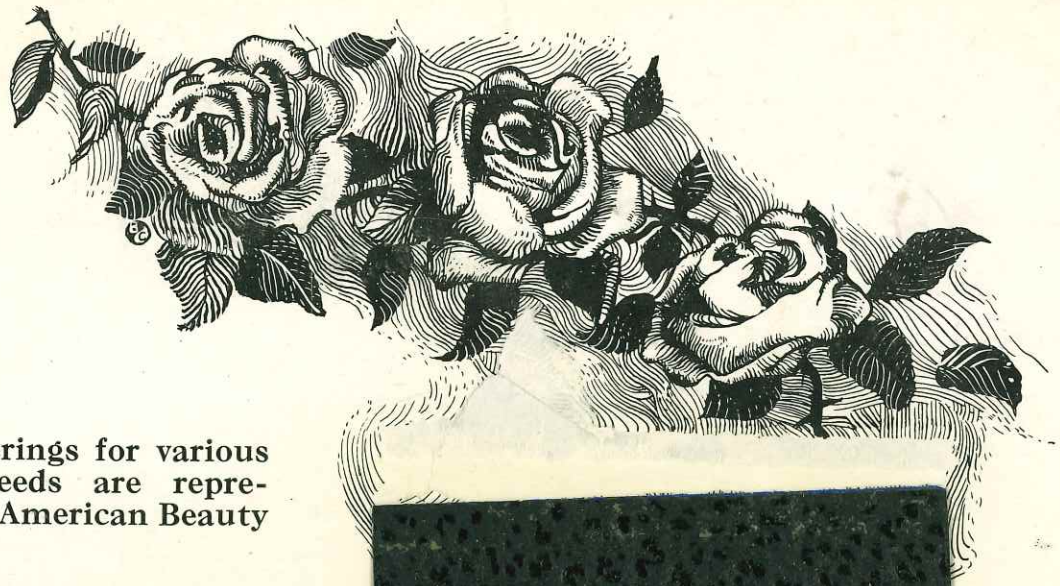
Are you keen to accept ideas for packages

That there can be beauty in packages depends on its distinctive touch of individuality. It is rather the question of doing exactly the right thing by adding label or seal bringing to light interest and feeling to purchase.

RICHARD M. KRAUSE
INCORPORATED
304 EAST 23rd STREET
NEW YORK
BOSTON CHICAGO

THE THREE AMERICAN BEAUTY PAPERS

Reg. Trade Mark



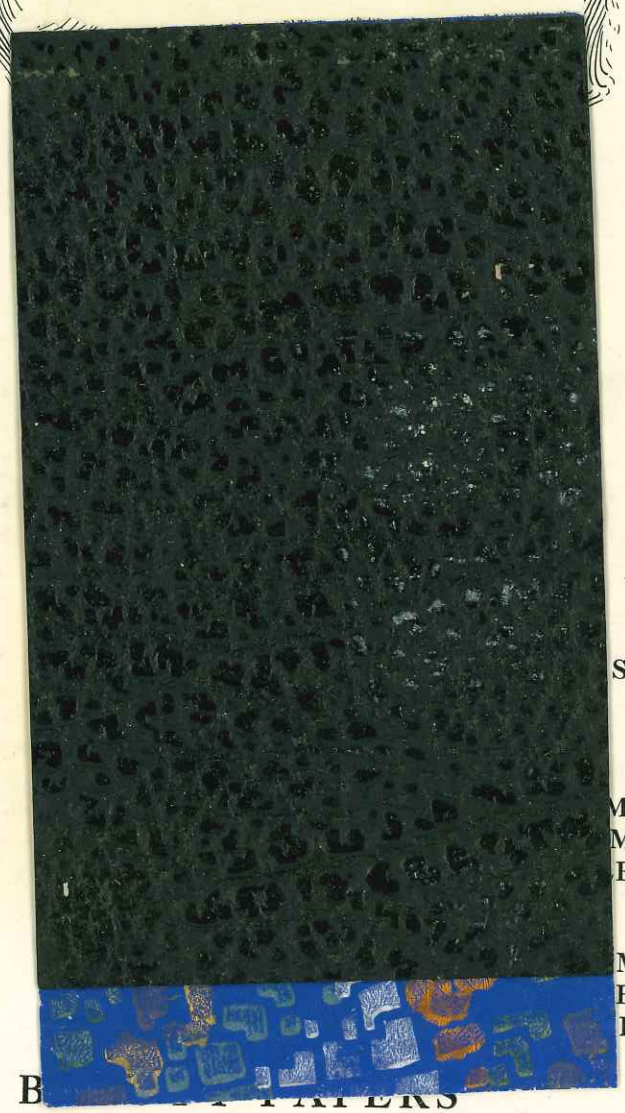
BOX coverings for various industrial needs are represented in the American Beauty Papers, etc.

American Beauty Papers:
Can be had in Plain and All Metallic Effects, in one to six colors—Lacquered Gold & Silver Papers, Plain & Embossed, that are uniform in shading and practically tarnish-proof.

Crystallized Spartex:
Exceptional for packaging and widely used in display work—in a variety of colors.

Mocotan—Imitation Leather:
A popular number for jewelry cases—leather goods and other products, where a very close imitation of leather is required.

Your reference files are not complete unless the complete American Beauty Line Sample Books are there. Write for them.



SPARTEX

MOCOTAN
MITATION
EATHERS

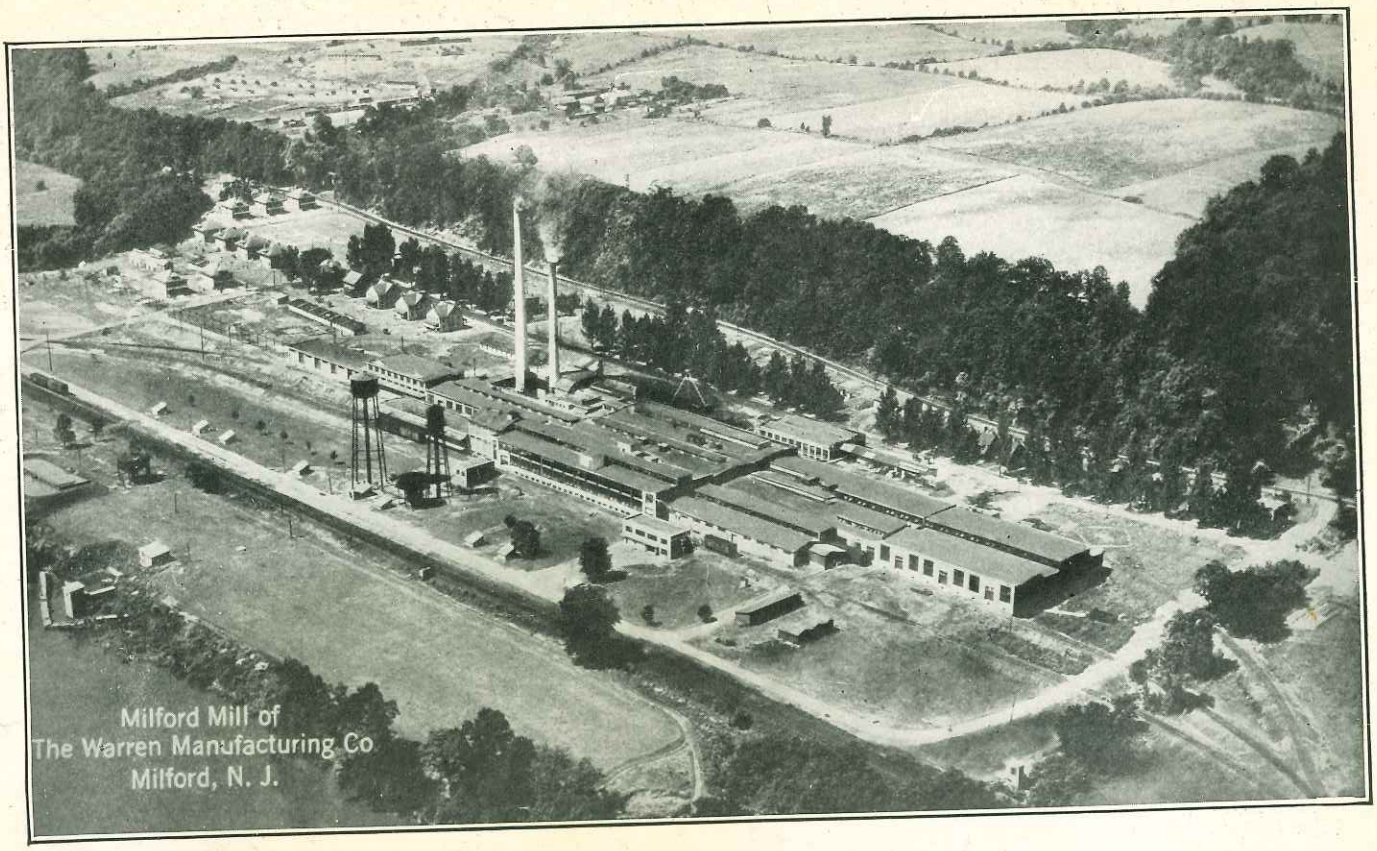
MERICAN
BEAUTY
PAPERS

AMERICAN B PAPERS

Manufactured by

C. R. WHITING CO.

281-287 New Jersey Railroad Ave., Newark, N. J.



Airview of the Milford, N. J., Plant of

The WARREN MANUFACTURING COMPANY

Executive Offices

342 Madison Avenue

NEW YORK, N. Y.

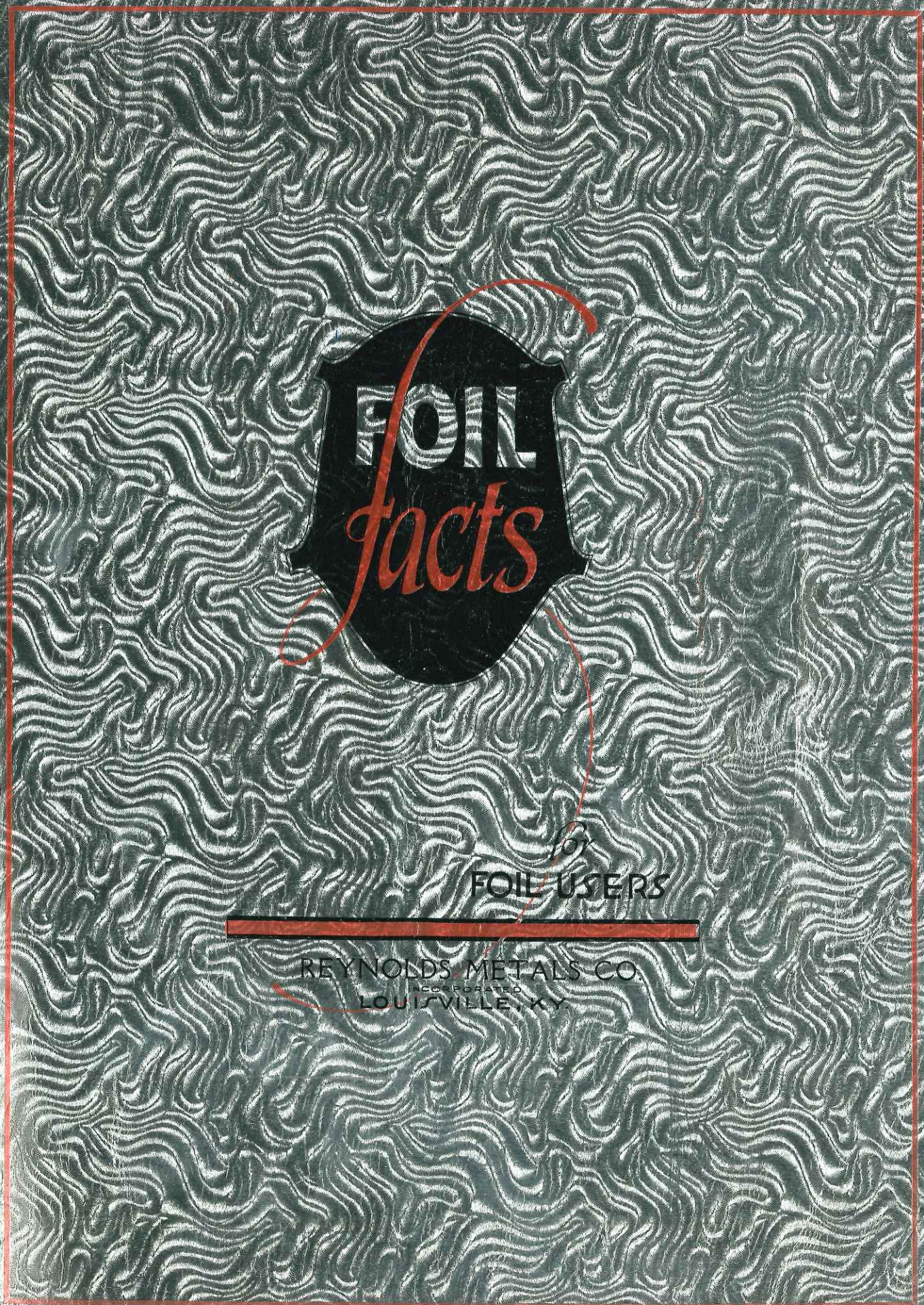
The five paper machines in this plant are devoted exclusively to the manufacture of

RIEGEL'S JEWEL BRAND GLASSINE

and

RIEGEL'S WAXED GLASSINE

Wrapped in transparent, moisture-proof glassine, the individuality of your carefully designed carton will be preserved and the contents will be protected from unfavorable atmospheric conditions. Our Research Laboratory is at your disposal to help determine the most efficient wrapper for your carton or package. Write for samples and complete information.


FOIL
facts
for
FOIL USERS
REYNOLDS METALS CO.
INCORPORATED
LOUISVILLE, KY.

FOIL AND FOIL PRODUCTS

ALUMINUM FOILS

Manufactured in all yields from 2,000 to 45,000 square inches per pound. Plain; embossed; printed; lacquered. With or without tissue interleaving. Mounted on dry or waxed papers. In sheets or rolls. Width up to 26 inches. Soft and pliable or annealed to any desired temper. Used for packing confections, chewing gum, tea, cocoanut, cheese, films, etc.

MASTER METAL FOIL
THE METAL SHIELD OF PROTECTION

MASTER METAL CARTONS

Lined or surfaced with silver or lacquered plain or embossed foil backed with substantial paperboard. Printed or unprinted. Combines advantages of paper and metal containers. Individual cartons and counter display boxes. For cakes, candies, cheese, cigars, cigarettes, ice cream, etc.

PURE TIN-FOILS

Manufactured in yields ranging from 2,000 to 8,000 square inches per pound. Lead-free foil can be supplied yielding 13,500 square inches per pound. The former grade may be plain; embossed; printed; lacquered. With or without tissue interleaving. Mounted on dry or waxed paper. In sheets or rolls. Used for packing cheese and confections.

MASTER METAL TITE-WRAPS

The tite wrap consists of foil inseparably attached to paper by an oderless, water-proof cement. Affords metal package protection at paper-package cost. Applied by standard tite-wrapping machines. Can be printed in colors. In sheets or rolls. Used for packing cereals, prepared foods, dried fruits, raisins, cocoanut, candies, etc.

COMPOSITION FOIL

Manufactured in yields ranging from 800 to 5,000 square inches per pound. Plain; embossed; printed; or lacquered. With or without tissue interleaving. Mounted on dry or waxed papers. In sheets or rolls. Used for wrapping cigars, candy, chewing gum, cigarettes, etc.

UNIFOIL BOX COVERS

A foil-surfaced paper-backed decorative box covering of rare beauty. Supplied in richly-embossed silver or colors. Easily handled by standard box-making machines. Special color-printed designs for Christmas. Offered in a wide range of embossing, colors, and fancy patterns in 20x26 inch sheets or 26-inch rolls.

LEAD FOILS

Manufactured in yields ranging from 600 to 1,600 square inches per pound. Plain only. Can be tissue interleaved and the lighter grades mounted on dry or waxed papers. In sheets or rolls. Chiefly used for packing tea and similar bulk products.

Our Service Department will gladly analyze your packing problems and recommend the proper grade of foil or type of package. Recommendations and samples on request. No obligation.

METALKRAFT

A foil-lined wrapping paper, the foil being sandwiched between two sheets of kraft paper. Moisture-proof and grease-proof. Useful as a lining for export shipping cases or for packing any article likely to be injured by moisture, insects, etc. Sheets or rolls.

REYNOLDS METALS COMPANY

INCORPORATED

LOUISVILLE, KENTUCKY

212 FIFTH AVE., NEW YORK 345 NINTH ST., SAN FRANCISCO

SALES OFFICES IN PRINCIPAL CITIES OF U. S. A.

We call your attention to

PAPERGLAS

—an unusually strong moisture proof, transparent glassine paper. Ideal for wrapping food products, medicinals, papetries, soaps, toilet preparations, candy and confections, textiles, books and the thousand and one articles whose beauty is enhanced by the very cover which protects them. The ability of Paperglas to take print, or embossing without loss of transparency gives to the *Paperglas-ed* package a quality of depth not approached by any other method of package wrapping.

WESTFIELD RIVER PAPER CO., INC.
RUSSELL, MASS.

143

PAPERGLAS

is not merely a transparent covering for a well designed and colorful printed package. Embossed or printed, it becomes an integral part of the package itself not only in point or protection, but as a definite addition to the article's sales appeal.

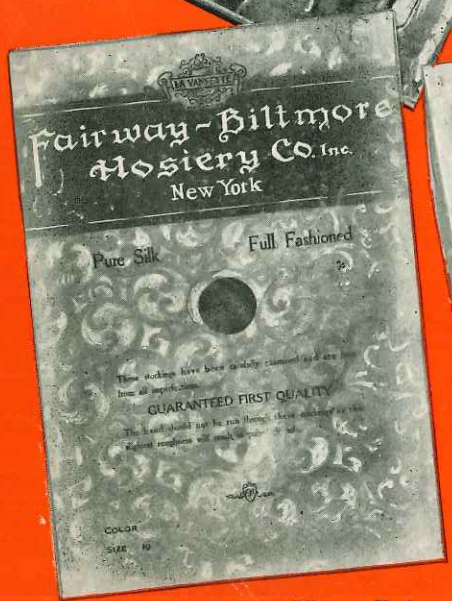
Sixteen different embossed patterns are shown on the following sample sheets. All are in 25 lb. basis. The four sheets preceding the last are respectively the 20 lb., 25 lb., 30 lb. and 40 lb. weights of Plain Paperglas and the last sample herein contained is 22 lb. Window Envelope Paperglas, the most transparent sheet of glassine paper made.

Special embossed designs may be had to order for customers desiring a trade marked design for their exclusive use.

Courtesy R. M. Haan Candy Company.

Courtesy Frank L. Shattuck Co.

Courtesy Beech-Nut Packing Co.



Courtesy Fairway-Biltmore Hosiery Co.

Courtesy American Cigar Co.

Courtesy Bayuk Cigars, Inc.

144

Stamped by Peerless Roll Leaf Co.

CHARM HOLDS THE EYE—
With *PAPERGLAS!*

Clothes make the man. . .and wraps make the package . . .for your products look only as good as its outer coat. Choose that coat wisely by choosing one of the beautiful and practical patterns in the *Paperglas* line.

A *Paperglas-ed* package arrests the roving eye—holds it! It whets the desire for possession. . .increases sales. . .and resales. It doubles the visibility of your package. . .makes it easy to see. . .and to buy.

Paperglas is strong and economical, greaseproof and greaseless, moistureproof and transparent. It takes any form of printing, stamping or embossing.

A *Paperglas-ed* package stands out above the average product. Let us assist you in protecting and beautifying your package.

WESTFIELD RIVER PAPER CO. INC.
RUSSELL, MASS., U. S. A.

New York Sales Office
501 Fifth Avenue

145

PAPERGLAS

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Beech-Nut Brand Sliced Bacon
Courtesy Beech-Nut Packing Co.
Courtesy Fairway-Billings Hosiery Co.
Courtesy American Paper Goods Co.

CHARM HOLDS THE EYE—

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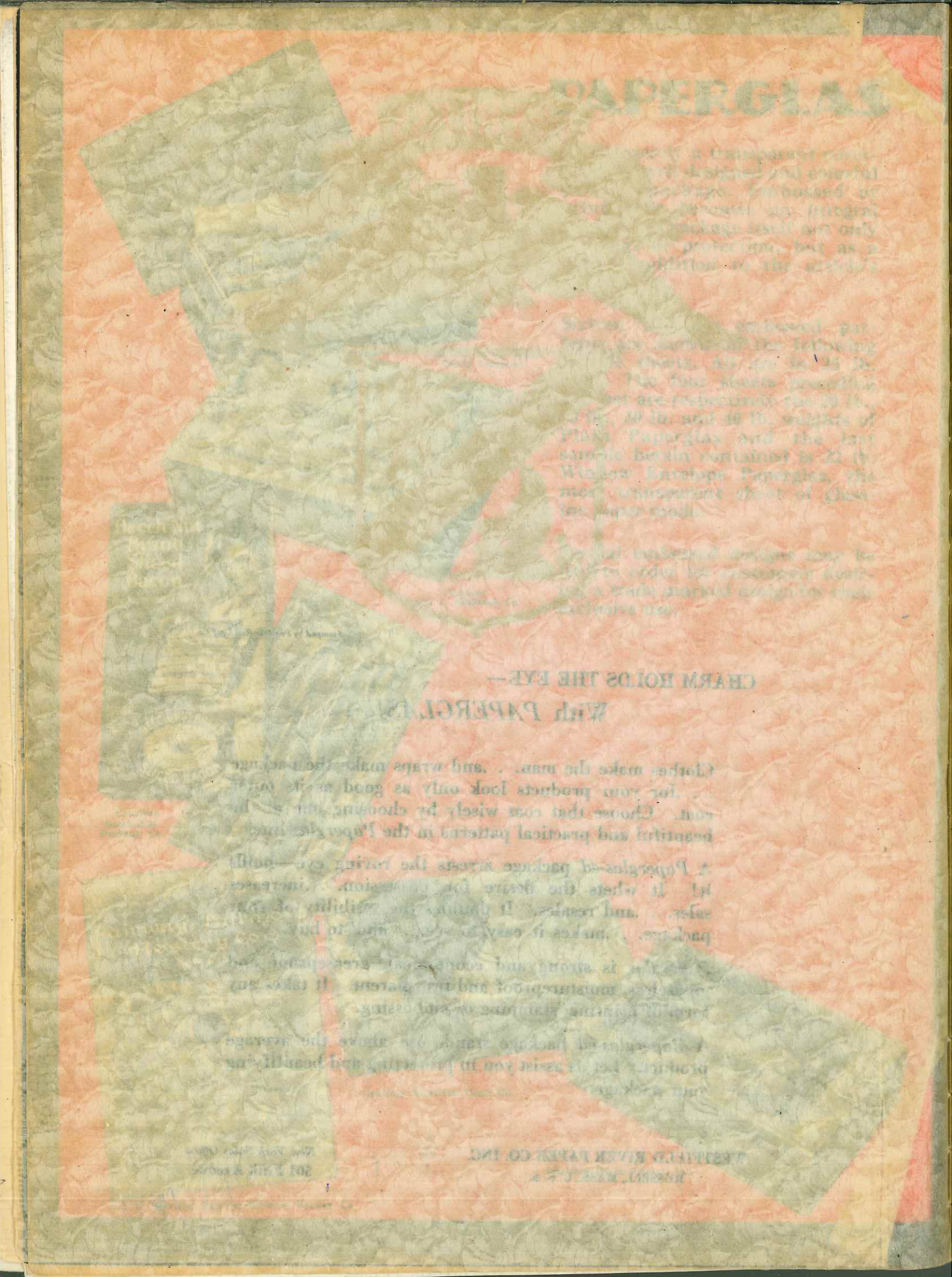
WESTFIELD RIVER PAPER CO. INC.
ROSSELL, MASS., U. S. A.

New York Sales Office
501 Fifth Avenue



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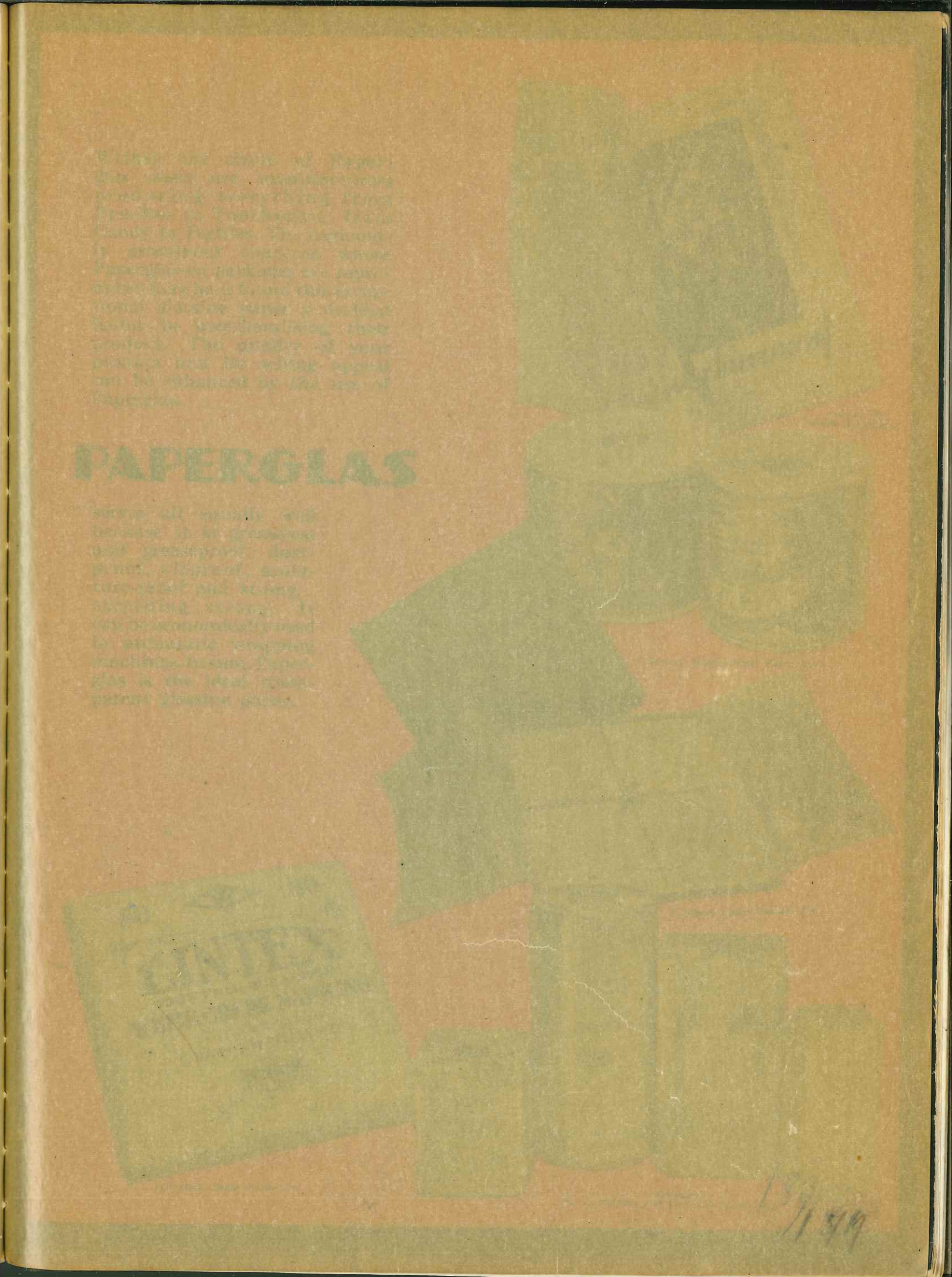
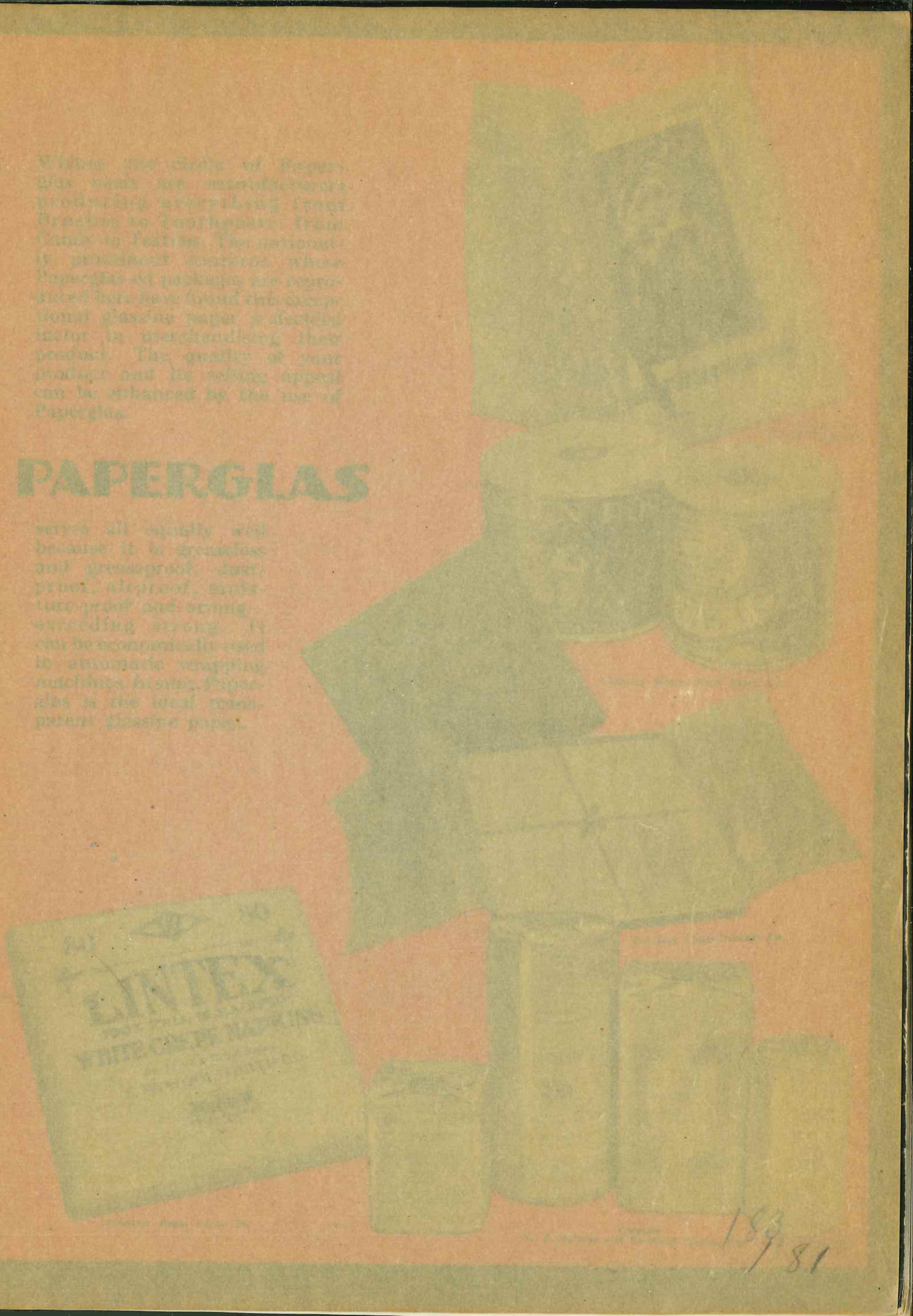
875


PAPERGLAS

Within the limits of Paperglas sizes are manufacturers producing everything from Drachms to Cwt bags, from Cloth to Leather. The astute ly produced cartons whose Paperglas packages are reproduced here have found this exceptional glassine paper a decided factor in increasing their product. The quality of your product and its selling appeal can be enhanced by the use of Paperglas.

PAPERGLAS

serves all equally well because it is greaseless and greaseproof, dustproof, oilproof, moisture-proof and scuff-resisting strong. It can be economically used in automatic wrapping machines. Paperglas is the ideal transparent glassine paper.



183/81

Within the circle of Paperglas users are manufacturers producing everything from Brushes to Toothpaste, from Candy to Textiles. The nationally prominent concerns whose Paperglas-ed packages are reproduced here have found this exceptional glassine paper a decided factor in merchandising their product. The quality of your product and its selling appeal can be enhanced by the use of Paperglas.

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183

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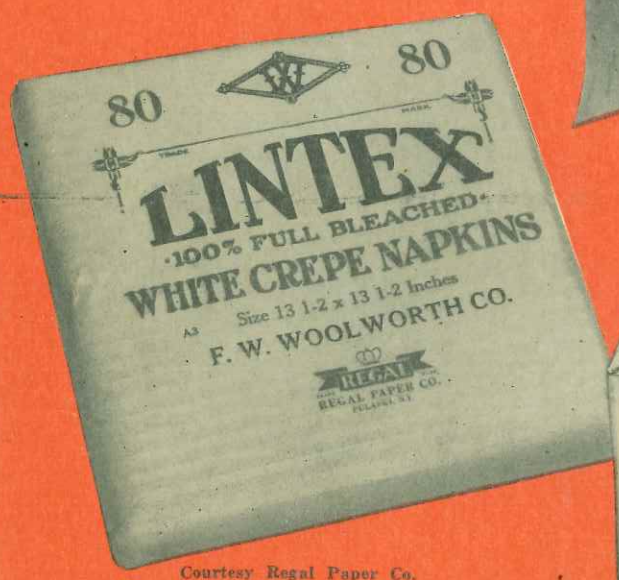
Courtesy The Baddon Craftsmen

Courtesy International Paper Co.

Courtesy Cluett-Peabody Co.



Courtesy Regal Paper Co.

Courtesy
N. Y. Quinine and Chemical Works, Inc.

Within the circle of Paperglas users are manufacturers producing everything from Brushes to Toothpaste, from Candy to Textiles. The nationally prominent concerns whose Paperglas-ed packages are reproduced here have found this exceptional glassine paper a decided factor in merchandising their product. The quality of your product and its selling appeal can be enhanced by the use of Paperglas.

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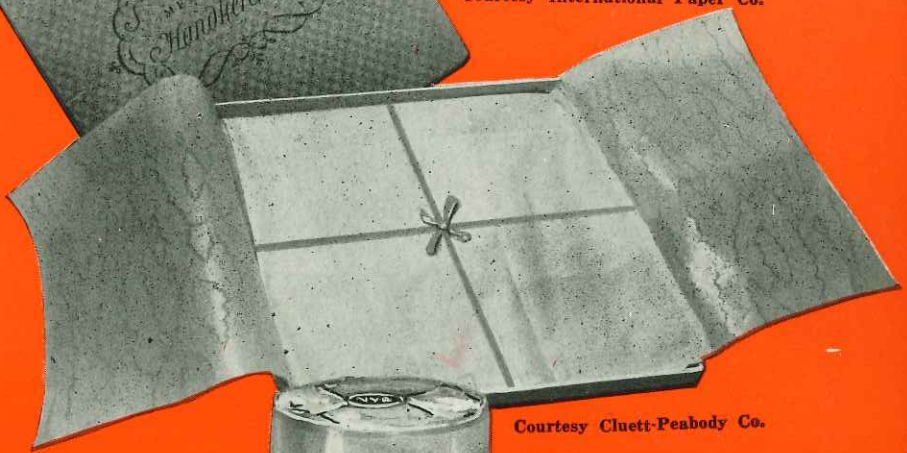
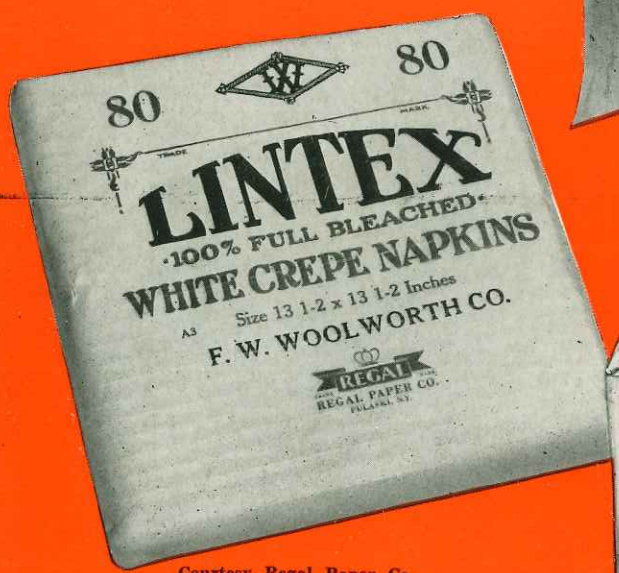
Courtesy The Haddon Craftsmen

Courtesy International Paper Co.



Courtesy Cluett-Peabody Co.



Courtesy Regal Paper Co.

Courtesy
N. Y. Quinine and Chemical Works, Inc.

We have called your attention to

PAPERGLAS

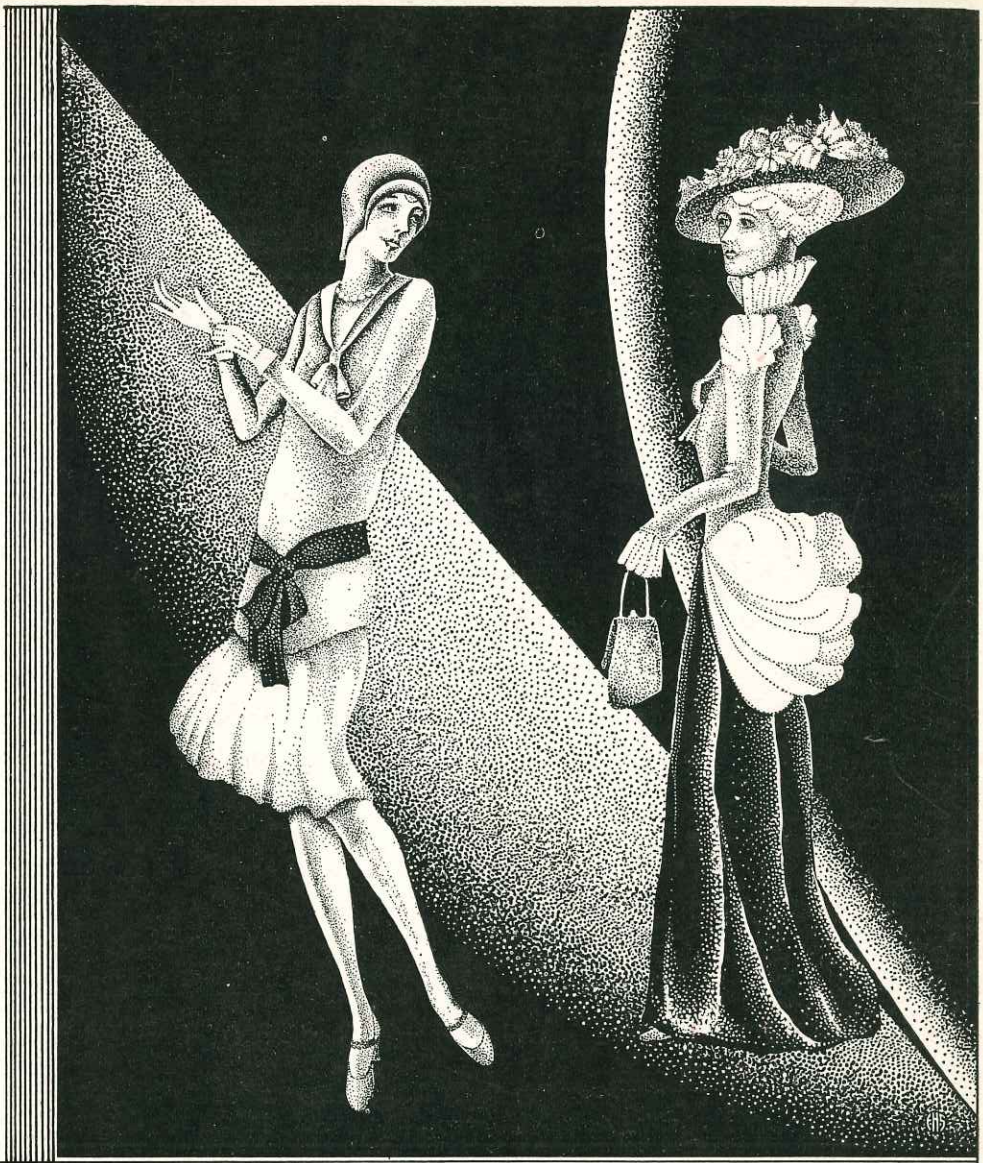
leaving it to Paperglas to show you the qualities it possesses . . . qualities of which we are proud.

There remains but to invite your further inquiries as to the exact place Paperglas may play in your packaging program.

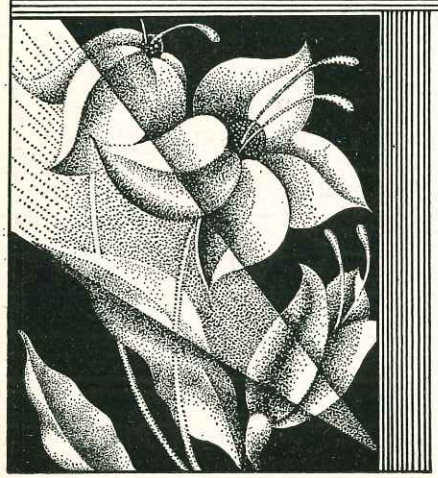
May we help you?

WESTFIELD RIVER PAPER CO., INC.
RUSSELL, MASS.

New York Sales Office
501 Fifth Avenue



TAKE THE BUSTLES OFF YOUR PACKAGE



A 1930 PRODUCT IN AN 1890 PACKAGE IS AS OUT OF PLACE AS A SUB-DEB IN A HOOP SKIRT. YOUR PACKAGE, YOUR LAST CHANCE TO ADVERTISE, MUST HAVE EVEN GREATER SALES APPEAL THAN THE ARTICLE ITSELF.

PACKAGES DESIGNED BY A FIRM DEVOTING ITSELF EXCLUSIVELY TO THE CREATION OF BEAUTIFUL—AND SELF-SELLING—CONTAINERS HAVE A SALES-COMPELLING ATTRACTIVENESS WHICH COMES ONLY AS A REWARD OF YEARS OF SPECIALIZATION IN PACKAGE DESIGN.

SPECIALISTS IN PACKAGE CREATION

PACKAGE DESIGN CORPORATION

8 MURRAY STREET NEW YORK, N. Y.

The Package Reflects the Quality of the Merchandise Within

SUCCESSFUL competition in the distribution of merchandise recognizes the package as a very important factor. To conform with modern merchandising methods the package must be more than a means of protection and identification; it must be designed to perform a very definite service.

Today, progressive manufacturers, who package their products for retail sale, develop the package first and build their advertising around it. They realize that, in the final analysis, the package is the first direct contact with the consumer as it stands on the shelf or counter competing with numerous other brands. And it is at this psychological point that a sale is made or lost.

A pretty picture won't do. Package designing has become a separate art in the field of merchandising, demanding the attention of specialists with experience in the creation and designing of packages from a merchandising point of view.

The Package Design Corporation functions purely as a creative and advisory organization in the design of packages. Creating new packages or redesigning old packages and all things relative to modern packaging is our work. Not a department stuck away in the corner of a manufacturer or agency.

We offer you a distinctly unique and unbiased service in the preparation of individual designs and ideas for packages. A letter, outlining your package problem, will receive our thorough and prompt attention.

PACKAGE DESIGN CORPORATION

EIGHT MURRAY STREET
NEW YORK, N. Y.

WILLIAMSON GLUE AND GUM WORKS

Incorporated 1914

2327 WEST EIGHTEENTH STREET, CHICAGO, ILLINOIS

Quality first . . . . . Uniformity always

ODORLESS LIQUID GLUES AND PASTES for high speed operation on all MODERN PACKAGING MACHINES

SANITARY ADHESIVES USED WITHOUT HEAT for all standard WRAPPING MATERIALS including

DuPONT CELLOPHANE

Normal and
Moistureproof

For making invisible, non-puckering joints in wrapping and sealing by high speed machine operation.

For joining Cellophane to Glassine, and for making window boxes.

These special adhesives have stood the test of years, and are used by nationally known manufacturers for hand and machine wrapping, sealing and labeling.

SPREADER BOTTLES with special rubber tips for hand application of Cellophane adhesives and for sealing Cellophane bags.

LABELING

On wood, fibre, glass or metal.
Pick-up gums and lap label paste.
Tin paste for spot labels on plain or lacquered tin.
Gums for plain or lacquered foils.
Bottle labeling gums.
Barrel labeling paste.
Waterproof labeling glue.
Special glues for low temperatures.

GLASSINE PAPER

Plain Glassine.
Waxed Glassine.
Hand or machine sealing and labeling.

TUBE WINDING

Spiral winding.
Straight winding.
Laminated fibre shipping drums.

CARTON WRAPPING

Loose wraps.
Tight wraps.
Separate end seals.

INDIVIDUAL PACKAGE CARTON SEALING

For hand or machine operation.

CARTON AND PAPER BOX MAKING

Set-up paper boxes.
Folding paper boxes.

SHIPPING CASE SEALING

For hand or machine sealing of fibre or corrugated cases.

INDIVIDUAL ADHESIVE PROBLEMS GIVEN SPECIAL ATTENTION—WORKING SAMPLES OF GLUE SENT ANYWHERE WITHOUT CHARGE OR OBLIGATION

PROMPT SHIPMENT

made in

5-GALLON AIR-TIGHT DRUMS
OR IN 50-GALLON BARRELS

If you want glue quick—wire Williamson

BUYER'S DIRECTORY SECTION

THE policy of the PACKAGING CATALOG in the Directory Section is to list every reliable American manufacturer of machinery, equipment or supplies selling to the packaging industries (as far as we can locate them) without charge under as many headings as is required for an adequate showing of their products. It is only by this policy that the directory can be made representative of the facilities of the entire packaging field.

All concerns represented in the catalog section of this volume are listed in bold face type under appropriate headings and further prominence is conferred by giving in each instance the page or pages upon which their data appears. This feature serves as a time saver and it is believed will increase the detailed information and data packaging concerns seek.

The recommendation is earnestly made that the Directory be used in conjunction with the Catalog pages, as much valuable information can be found concerning products, if reference is made to the concerns whose page numbers are given under the various subject headings.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

ABSORBENT WADDING

International Paper Co., New York, N. Y.
Kimberly-Clark Co., Neenah, Wis.—111
Loomis & Co., Boston, Mass.
Rochester Folding Box Co., Rochester, N. Y.

ADHESIVES

Adex Mfg. Co., Baltimore, Md.
Arabol Mfg. Co., New York, N. Y.—76
Cibara Mfg. Co., St. Louis, Mo.
Consumers Glue Co., St. Louis, Mo.
Dewey & Almy Chemical Co., Cambridge, Mass.
Ermold Co., Edward, New York, N. Y.—97
Findley Co., F. G., Milwaukee, Wis.
Frohman Chemical Co., Sandusky, O.
Gane Bros. & Lane, Inc., Chicago Ill.
Grasselli Chemical Co., Cleveland, O.
Leyland Co., Inc., Thos., Readville, Mass.
Mechling Chemical Co., Camden, N. J.
National Adhesives Co., New York, N. Y.
Philadelphia Quartz Co., Philadelphia, Pa.
Russia Cement Co., Gloucester, Mass.
Standard Sealing & Equipment Corp., Long Island, N. Y.
Stein-Hall & Co., New York, N. Y.
Williamson Gum & Glue Works, Chicago, Ill.—143

AUTOMATIC CARTON LOADING MACHINES

Anderson, Inc., E. D., New York, N. Y.—74–75
Automat Molding and Folding Co., Toledo, O.—78–79
Automatic Packaging Machinery Co., Nashua, N. H.—80
Cartoning Machinery Corp., Newport, R. I.—89
Jones & Co., Inc., R. A., Covington, Ky.
National Packaging Machinery Co., Boston, Mass.—119–122
Redington Co., F. B., Chicago, Ill.

AUTOMATIC PACKAGING MACHINERY

American Machine & Foundry Co., Brooklyn, N. Y.
Anderson, Inc., E. D., New York, N. Y.—74–75
Arenco Machine Co., Inc., New York, Y.—77
Automat Molding & Folding Co., Toledo, O.—78–79
Automatic Packaging Machinery Co., Nashua, N. H.—80
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—81
Brown Bag Filling Machine Co., The, Fitchburg, Mass.—86–87
Cartoning Machinery Corp., Newport, R. I.—89
Colton Co., Arthur, Detroit, Mich.—90
Ferguson Co., J. L., Joliet, Ill.—98–100
Hesser Machine Co., New York, N. Y.
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—91
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—107–108
National Packaging Machinery Co., Boston, Mass.—119–122
Package Machinery Co., Springfield, Mass.—124–125
Packaging Machinery Co., Yonkers, N. Y.
Peters Machinery Co., Chicago, Ill.—126
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington Co., F. B., Chicago, Ill.
Scale & Machinery, Inc., New York, N. Y.
Small Mfg., C. T., St. Louis, Mo.
Stokes Machine Co., F. J., Philadelphia, Pa.—131
Stokes & Smith Co., Philadelphia, Pa.—132–133
Triangle Package Machinery Co., Chicago, Ill.

BAGS, BURLAP, COTTON

American Bag Co., Memphis, Tenn.
American Mills Co., Atlanta, Ga.
Bartley Mfg. Co., New York, N. Y.
Bell Bag Co., Inc., Baltimore, Md.
Bemis Bros. Bag Co., St. Louis, Mo.
Central Bag Mfg. Co., Chicago, Ill.
Chase Bag Co., St. Louis, Mo.
Cleveland-Akron Bag Co., Cleveland, O.
Eastern Burlap Bag Co., Hartford, Conn.
Feitel, Dan W., Bag Co., New Orleans, La.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Morrison & Rinsman, Buffalo, N. Y.
National Bag Co., Naperville, Ill.
Philadelphia Bag Co., Philadelphia, Pa.

BAGS (Mailing)

Bemis Bros. Bag Co., St. Louis, Mo.
Chase Bag Co., Cleveland, O.
Cleveland-Akron Bag Co., Cleveland, O.
Mason Box Co., The, Attleboro Falls, Mass.—Insert 110–111
Milwaukee Bag Co., Milwaukee, Wis.
National Bag Co., Naperville, Ill.

BAGS (paper)

American Paper Goods Co., Kensington, Conn.—73
Angier Corp., Framingham, Mass.
Arkell Safety Bag Co., New York, N. Y.
Arkell & Smith, Canajoharie, N.Y.
Atlanta Paper Co., Atlanta, Ga.
Bates Valve Bag Co., New York, N. Y.
Bell Bag Co., Inc., Baltimore, Md.
Bemis Bros. Bag Co., St. Louis, Mo.
Betner Co., Ben C., Devon, Pa.
Brown Paper Goods Co., Chicago, Ill.
California Bag & Paper Co., Emeryville, Cal.
Chase Bag Co., Cleveland, O.
Chatfield & Woods Co., Cincinnati, O.
Chicago-Detroit Bag Co., Chicago, Ill.
Cleveland-Akron Bag Co., Cleveland, O.
Columbia Paper Bag Co., Baltimore, Md.
Continental Paper & Bag Mills, New York, N. Y.
Cupples, Sam'l., Woodenware Co., St. Louis, Mo.
E-Z Opener Bag Co., Decatur, Ill.
Fulton Bag Co., Fulton, N. Y.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Hercules Paper Bag Co., Reading, Pa.
Hollis & Duncan, Chicago, Ill.
Hudson Bag Co., Brooklyn, N. Y.
Jaite Co., Jaite, O.
Mason Box Co., The, Attleboro Falls, Mass.—Insert 110–111
Memphis Bag Co., Memphis, Tenn.
Milwaukee Bag Co., Milwaukee, Wis.
National Paper Co., Atlanta, Ga.
Port Huron Sulphite & Paper Co., Port Huron, Mich.
Raymond Bag Co., The, Middletown, O.
Royal, Thos. M. & Co., Philadelphia, Pa.
Taggart Bros. Co., New York, N. Y.
Tuttle Press Co., The, Appleton, Wis.—Insert 130–131
Unger Commercial Co., The, Cleveland, O.
Union Bag & Paper Corp., New York, N. Y.—136
Union Paper & Twine Co., Cleveland, O.
U. S. Paper Goods Co., Cincinnati, O.
Universal Paper Bag Co., New Hope, Pa.
Valve Bag Co. of America, Toledo, O.
Wayne Paper Goods Co., Ft. Wayne, Ind.
Wortendyke Mfg. Co., Richmond, Va.

BAGS, TRANSPARENT PAPER (Glassine, Transparent Cellulose, Waxed Paper)

American Paper Goods Co., Kensington, Conn.—73
American Tissue Mills, Holyoke, Mass.—Insert 76–77
Bemis Bros. Bag Co., St. Louis, Mo.
Brown Paper Goods Co., Chicago, Ill.
Betner Co., Ben C., Devon, Pa.
Central Waxed Paper Co., Chicago, Ill.
Coated Paper Products Co., The, Minerva, O.
Continental Paper & Bag Corp., New York, N. Y.
Deerfield Glassine Co., Monroe Bridge, Mass.—Insert 90–91
Driver Co., John M., Philadelphia, Pa.
Du Pont Cellophane Co., Inc., New York, N. Y.—94
Grand Lake Co., New York, N. Y.
Hartford City Paper Co., Hartford City, Ind.
Herz Co., Alexander, New York, N. Y.
McDowell Paper Mills, Philadelphia, Pa.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Menasha Products Co., Chicago, Ill.
Milwaukee Printing Co., Milwaukee, Wis.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Newark Glassine Bag Co., Newark, N. J.
Republic Bag Co., Brooklyn, N. Y.
Rhinelander Paper Co., Rhinelander, Wis.
Royal Co., Thomas M., Philadelphia, Pa.
Shamut Waxed Paper Co., Holliston, Mass.
Sylvania Industrial Corp., New York, N. Y.—134–135
Transparent Paper Printing Co., New York, N. Y.
Unger Commercial Co., The, Cleveland, O.
Union Bag & Paper Corp., New York, N. Y.—136
Warren Mfg. Co., New York, N. Y.—140
Westfield River Paper Co., Russell, Mass.—Insert 142–143

BALE TIES

Acme Steel Co., Chicago, Ill.—68
American Manufacturing Co., Brooklyn, N. Y.
American Steel & Wire Co., Chicago, Ill.
Crawfordsville Wire & Nail Co., Crawfordsville, Ind.
Gerrard Co., Inc., Chicago, Ill.
Grammes, L. F., & Sons, Allentown, Pa.
Kokomo Bale Tie Co., Kokomo, Ind.
Nichols Wire & Sheet Co., Kansas City, Mo.
Roeblings, John, & Sons Co., Trenton, N. J.
Shelby Wire Co., Shelby, O.
Signode Steel Strapping Co., Chicago, Ill.—130
Stanley Works, New Britain, Conn.
Tennant & Sons, Inc., C. W., New York, N. Y.
Union Steel & Wire Co., Indianapolis, Ind.

BALING PRESSES

Davenport Mfg. Co., Davenport, Ia.
Galland-Henning Co., Milwaukee, Wis.
Gane Bros. & Lane, Inc., Chicago, Ill.
Logemann Brothers Co., Milwaukee, Wis.
Trojan Mfg. Co., Grand Rapids, Mich.

BARREL HEAD LINERS

Angier Corp., Framingham, Mass.
Consolidated Paper Co., Monroe, Mich.—Insert 88–89
Edgewater Paper Co., Menasha, Wis.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92–93
Hinde & Dauch Paper Co., Sandusky, O.
Hummel & Downing Co., Milwaukee, Wis.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—109
Nashua Gummed and Coated Paper Co., Nashua, N. H.
Paterson Parchment Paper Co., Passaic, N. J.
Rexford Paper Co., Milwaukee, Wis.
Safepack Mills, Millis, Mass.
West Carrollton Parchment Co., West Carrollton, Ohio.

BARRELS, SLACK

Farmers Mfg. Co., Norfolk, Va.
Fessenden Companies, Inc., Townsend, Mass.
Greif Bros. Cooperage Co., Cleveland, O.
K. W. Jacobs Cooperage Co., Milwaukee, Wis.
Mancuso Cooperage Co., Inc., Kenner, La.
Sandusky Cooperage & Lumber Co., St. Louis, Mo.
St. Louis Cooperage Co., St. Louis, Mo.
The Virginia Barrel Co., Winchester, Va.
Western Cooperage Co., Portland, Ore.

BARRELS (Steel)

Atlas Steel Barrel Corp., New York, N. Y.
Cleveland Steel Barrel Co., Cleveland, O.
Detroit Range Boiler and Steel Barrel Co., Detroit, Mich.
Draper Mfg. Co., Cleveland, O.
Hydraulic Pressed Steel Co., Cleveland, O.
Knapp Metal Barrel Co., San Francisco, Cal.
Mahoning Steel Products Co., Warren, O.
National Enameling & Stamping Co., New York, N. Y.
National Steel Barrel Co., Cleveland, O.
Ohio Corrugating Co., Warren, O.
Petroleum Iron Works Co., Sharon, O.
Toledo Steel Barrel Co., Toledo, O.

BARRELS, TIGHT

Atlantic Tank & Barrel Corp., North Bergen, N. J.
Fessenden Companies Inc., Townsend, Mass.
C. G. Hopkins Cooperage Co., Joplin, Mo.
K. W. Jacobs Cooperage Co., Milwaukee, Wis.
National Cooperage & Woodenware Co., Peoria, Ill.
Northern Cooperage Co., St. Paul, Minn.
Pekin Cooperage Co., Pekin, Ill.
Sandusky Cooperage & Lumber Co., St. Louis, Mo.
St. Louis Cooperage Co., St. Louis, Mo.
B. C. Sheahan Co., Chicago, Ill.
Western Cooperage Co., Portland, Ore.

BASKETS, DELIVERY

Backus, A., Jr. & Sons, Detroit, Mich.
Burlington Basket Co., Burlington, Ia.
Fibopak Co., Chicago, Ill.
Gereke-Allen Carton Co., St. Louis, Mo.
Lewis Co., Inc., G. B., Watertown, Wis.
Unger Commercial Co., The, Cleveland, O.

BILLS OF LADING (Invoices, Shipping Forms, Etc.)

American Sales Book Co., Elmira, N. Y.
Egry Register Co., Dayton, O.
Gilman Fanfold Co., Niagara Falls, N. Y.
Milwaukee Printing Co., Milwaukee, Wis.
Specialty Paper Co., Dayton, O.
Standard Register Co., Dayton, O.

BOARD, OILED (Rolls and Sheets)

Bradley Stencil Machine Co., St. Louis, Mo.
Diagraph Stencil Machine Corp., St. Louis, Mo.
Marsh Stencil Machine Co., Belleville, Ill.

BOTTLES (Glass)

Atlantic Bottle Co., Brackenridge, Pa.
Capstan Glass Co., Connellsville, Pa.
Carr-Lowery Glass Co., Baltimore, Md.
Cunningham Glass Co., D. O., Pittsburgh, Pa.
Fairmont Glass Works, Indianapolis, Ind.
Hart Glass Mfg. Co., Dunkirk, Ind.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

Hazel-Atlas Glass Co., Wheeling, W. Va.
Maryland Glass Corp., Baltimore, Md.
Nivison-Weiskopf Co., Cincinnati, O.
Owens-Illinois Glass Co., Toledo, O.
Reed Glass Co., F. E., Rochester, N. Y.
Root Glass Co., Terre Haute, Ind.
Swindell Bros., Baltimore, Md.
Turner Glass Co., Terre Haute, Ind.
Tygart Valley Glass Co., Washington, Pa.
Wheaton, T. C., Millville, N. J.

BOX BOARD PAPER (Coated)

American Coating Mills, Elkhart, Ind.
Container Corp. of America, Chicago, Ill.
Gair Co., Robert, New York, N. Y.—Insert 100–101
Lowe Paper Co., Ridgefield, N. J.—72
National Folding Box Co., New Haven, Conn.
United Paperboard Co., Inc., New York, N. Y.
Wabash Coating Mills, Wabash, Ind.

BOX BOARD PAPER (Folding)

Alton Box Board & Paper Co., Alton, Ill.
American Coating Mills, Elkhart, Ind.
Berminghan & Prosser Co., Kalamazoo, Mich.
Butterfield-Barry Co., New York, N. Y.
Cherry River Paper Co., Philadelphia, Pa.
Consolidated Paper Co., Monroe, Mich.—Insert 88–89
Container Corp. of America, Chicago, Ill.
Federal Paperboard Co., Inc., Bogota, N. J.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92–93
Gair Co., Robert, New York, N. Y.—Insert 100–101
Gardner & Harvey Co., Middletown, O.
Lawless Bros. Paper Mills, East Rochester, N. Y.
La Boiteaux Co., The, Cincinnati, O.
Lowe Paper Co., Ridgefield, N. J.—72
Mac Sim Bar Paper Co., Otsego, Mich.
Marathon Paper Mills, Rothschild, Wis.
Mead Sales Co., Ltd., New York, N. Y.
Michigan Carton Co., Battle Creek, Mich.
National Folding Box Co., New Haven, Conn.
Ohio Boxboard Co., Rittman, O.
Richardson Co., Lockland, O.
Robertson Paper Co., Montville, Conn.
Republic Paperboard Co., Cincinnati, O.
Schmidt & Ault Paper Co., York, Pa.
Sutherland Paper Co., Kalamazoo, Mich.
United Paperboard Co., Inc., New York, N. Y.

BOX BOARD PAPER (Set-Up)

Alton Box Board & Paper Co., Alton, Ill.
American Coating Mills, Elkhart, Ind.
Butterfield-Barry Co., New York, N. Y.
Cherry River Paper Co., Philadelphia, Pa.
Container Corp. of America, Chicago, Ill.
Continental Paper Co., Bogota, N. J.
Downington Paper Co., Downington, Pa.
Franklin Board & Paper Co., Franklin, O.
La Boiteaux Co., Cincinnati, O.
Lawless Bros. Paper Mills, East Rochester, N. Y.
McEwan & Sons, R. B., Whippany, N. J.
Mac Sim Bar Paper Co., Otsego, Mich.
Mead Sales Co., Ltd., New York, N. Y.
Ravenswood Paper Mills, Long Island City, N. Y.
Republic Paperboard Co., Cincinnati, O.
Richardson Co., The, Lockland, O.
Sutherland Paper Co., Kalamazoo, Mich.
United Paperboard Co., Inc., New York, N. Y.

BOX LACES

American Lace Paper Co., Milwaukee, Wis.
Milwaukee Lace Paper Co., Milwaukee, Wis.
U. S. Lace Paper Works, Brooklyn, N. Y.

BOX TOP PADDING

American Lace Paper Co., Milwaukee, Wis.
Kimberly-Clark Corp., Nennah, Wis.—111
Sweetnam, Inc., Geo. H., Cambridge, Mass.—134
Union Wadding Co., Pawtucket, R. I.

BOXES (Corrugated, Solid Fibre)

Agar Manufacturing Corp., Whippany, N. J.
American Can Co., New York, N. Y.—69
American Corrugated Paper Products Corp., New York, N. Y.
American Corrugating Co., Grand Rapids, Mich.
Andrews Co., O. B., Chattanooga, Tenn.
Atlas Box Co., Chicago, Ill.
Bird & Son, Inc., East Walpole, Mass.
Bliss Co., Inc., H. R., Niagara Falls, N. Y.—82–84
Bogota Paper & Board Co., Bogota, N. J.
Brack Container Corp., Rochester, N. Y.
Buffalo Corrugated Container Co., Buffalo, N. Y.
City Corrugated Paper Products Co., Inc., New York, N. Y.
Consolidated Paper Co., Monroe, Mich.—Insert 88–89
Container Corp. of America, Chicago, Ill.
Corning Fibre Box Corp., The, Corning, N. Y.
Corrugated Container Co., Philadelphia, Pa.
Corrugated Container Corp., Columbus, O.
Crescent Box Corp., Philadelphia, Pa.
Densen Corrugated Paper Co., Ridgefield Park, N. J.
Detroit Corrugated Box Co., Detroit, Mich.
Eggers-O'Flying Co., Omaha, Neb.
Evans Fibre Box Co., Chicago, Ill.
Federal Container Co., Philadelphia, Pa.
Fiber Board Container Co., Richmond, Va.
Fort Wayne Corrugated Paper Co., Fort Wayne, Ind.
Gair Co., Robert, New York, N. Y.—Insert 100–101
Gardner & Harvey Co., The, Middletown, O.
Gaylord, Inc., Robert, St. Louis, Mo.
General Fibre Box Co., Springfield, Mass.
Gibraltar Corrugated Paper Co., Inc., North Bergen, N. J.
Hercules Paper Box Co., Columbus, O.
Hinde & Dauch Paper Co., The, Sandusky, O.
Hummel & Downing Co., Milwaukee, Wis.
Indiana Fibre Products Co., Marion, Ind.
Inland Box Corporation, Indianapolis, Ind.
Jackson Box Co., The, Cincinnati, O.
Kieckhefer Container Corp., Milwaukee, Wis.
Kress Box Co., F. J., Pittsburgh, Pa.
Mengel Company, Louisville, Ky.
Menasha Woodenware Co., Menasha, Wis.
Mid-West Box Co., Chicago, Ill.
Monroe Paper Products Co., Monroe, Mich.
National Paper Box Co., Kansas City, Kan.
Nivison-Weiskopf Co., The, Cincinnati, O.
Ohio Boxboard Co., Cleveland, O.
Ottawa River Paper Co., Toledo, O.
Owens-Illinois Glass Co., Toledo, O.
Pa Pro Co., The, Glenfield, N. Y.
Paraffine Companies, The, Inc., San Francisco, Cal.
Pequot Mfg. Corp., Glendale, L. I., N. Y.
Richardson Co., The, Lockland, O.
River Raisin Paper Co., Monroe, Mich.
Rochester Folding Box Co., The, Rochester, N. Y.
Rockford Fibre Container Co., Rockford, Ill.
Schmidt Lithograph Co., San Francisco, Cal.
Schultz Co., A. Geo., Milwaukee, Wis.
Sefton Mfg. Corp., Chicago, Ill.—Insert 128–129
Standard Corrugated Box Co., St. Louis, Mo.
Star Corrugated Box Co., Maspeth, L. I., N. Y.
Texas Corrugated Box Co., Dallas, Texas
U. S. Corrugated Fibre Box Co., Indianapolis, Ind.
Wabash Fibre Box Co., Terre Haute, Ind.
Waldorf Paper Products Co., St. Paul, Minn.
Weber & Co., David, Philadelphia, Pa.

BOXES (Display)

Ace Carton Corp., Chicago, Ill.
Atlantic Carton Corp., Norwich, Conn.
Badger Carton Co., Milwaukee, Wis.
Brooks Bank Note Co., Springfield, Mass.
Brown & Bailey Co., Philadelphia, Pa.
Burt Co., Ltd., F. N., Buffalo, N. Y.—Insert 84–85
Campbell Paper Box Co., South Bend, Ind.—88
Climax Paper Box Co., No. Cambridge, Mass.
Consolidated Paper Co., Monroe, Mich.—Insert 88–89
Continental Folding Paper Box Co., Ridgefield, N. J.
Danbury, Square Box Co., Danbury, Conn.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92–93
Gair Co., Robert, New York, N. Y.—Insert 100–101
Gardner & Harvey Co., Middletown, O.
Gereke-Allen Carton Co., St. Louis, Mo.
Howell & Co., F. M., Elmira, N. Y.
Hummel & Downing Co., Milwaukee, Wis.
International Folding Paper Box Co., North Bergen, N. J.
International Printing Co., Indianapolis, Ind.
Interstate Folding Box Co., Middletown, O.
Karle Lithographic Co., Rochester, N. Y.
Lord Baltimore Press, Baltimore, Md.
Mason Box Co., The, Attleboro Falls, Mass.—Insert 110–111
Menasha Products Co., Chicago, Ill.
Michigan Carton Co., Battle Creek, Mich.
Milwaukee Paper Box Co., Milwaukee, Wis.
Molitor Box Co., Milwaukee, Wis.
Morris Paper Mills, Chicago, Ill.
National Carton Co., Joliet, Ill.
National Folding Box Co., New Haven, Conn.
National Metal Edge Box Co., Philadelphia, Pa.
Randolph Box & Label Co., Chicago, Ill.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Richardson Co., Lockland, O.
Ritchie & Co., W. C., Chicago, Ill.
Robertson Paper Box Co., Inc., Montville, Conn.
Rochester Folding Box Co., Rochester, N. Y.
Rowell Co., Inc., E. N., Batavia, N. Y.
Schultz Co., A. Geo., Milwaukee, Wis.
Sefton Manufacturing Corp., Chicago, Ill.—Insert 128–129
Shoup Co., Inc., A. D., Brooklyn, N. Y.—128
Sutherland Paper Co., Kalamazoo, Mich.
U. S. Printing & Litho. Co., Cincinnati, O.
Voss Corporation, Karl, Hoboken, N. J.—138
Wayne Paper Goods Co., Ft. Wayne, Ind.

BOXES (Folding Cartons)

Ace Carton Corp., Chicago, Ill.
American Carton Corp., Brooklyn, N. Y.
American Carton Co., San Francisco, Cal.
American Carton Corp., Chicago, Ill.
American Folding Box Co., St. Louis, Mo.
American Paper Box Co., Grand Rapids, Mich.
Andrews, O. B., Company, Chattanooga, Tenn.
Atlantic Carton Corp., Norwich, Conn.
Baltimore Paper Box Co., Baltimore, Md.
Badger Carton Corp., Milwaukee, Wis.
Boxboard Products Co., San Francisco, Cal.
Brooks Bank Note Co., Springfield, Mass.
Brown & Bailey Co., Philadelphia, Pa.
Calvert Lithographing Co., Detroit, Mich.
Campbell Paper Box Co., South Bend, Ind.—88
Central Paper Box Co., Kansas City, Mo.
Climax Mfg. Co., Castorland, N. Y.
Coast Carton Co., Seattle, Wash.
Columbia Paper Box Co., Portland, Ore.
Consolidated Paper Co., Monroe, Mich.—Insert 88–89
Continental Folding Paper Box Co., Ridgefield, N. J.
Danbury Square Box Co., The, Danbury, Conn.
Dayton Folding Box Co., Cincinnati, O.
Densen Carton Co., Inc., Ridgefield Park, N. J.
Excelsior Paper Box Co., St. Louis, Mo.
Forbes Lithograph Mfg. Co., Boston, Mass.
Forsyth Folding Box Co., Winston-Salem, N. C.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92–93
Fort Wayne Box Co., Fort Wayne, Ind.
Gair Co., Robert, New York, N. Y.—Insert 100–101
Gardner & Harvey Co., Middletown, O.
Gebhardt Folding Box Co., Dayton, O.
Gereke-Allen Carton Co., St. Louis, Mo.
Grand Rapids Paper Box Co., Grand Rapids, Mich.
Great Lakes Paper Box Co., Cleveland, O.
Guilford Folding Box Co., Baltimore, Md.
Hatch & Co., C. F., Lowell, Mass.
Howell & Co., F. M., Elmira, N. Y.
Hummel & Downing Co., Milwaukee, Wis.
Illinois Carton Corp., Chicago, Ill.
Illinois Carton & Label Co., Chicago, Ill.
International Printing Co. of Indiana, Indianapolis, Ind.
Interstate Folding Box Co., Middletown, O.
Karle Lithograph Co., Rochester, N. Y.
Kratz, A. S., Co. Inc., The, Richmond, Va.
Lebanon Paper Box Co., The, Lebanon, Pa.
Lord Baltimore Press, Baltimore, Md.
Menasha Products Co., Chicago, Ill.
Michigan Carton Co., Battle Creek, Mich.
Milwaukee Paper Box Co., Milwaukee, Wis.
Molitor Box Co., Milwaukee, Wis.
Morris Paper Mills, Morris, Ill.
Muirson Label & Carton Co., Brooklyn, N. Y.
Myers, Inc., J. & P. B., Brooklyn, N. Y.
National Carton Co., Joliet, Ill.
National Folding Box Co., New Haven, Conn.
National Metal Edge Box Co., Philadelphia, Pa.
National Paper Box Co., Kansas City, Mo.
National Paper Products Co., Los Angeles, Cal.
Nevins-Church Press, New York City
Newport Carton Co., Newport, R. I.
Ohio Box Board Co., Rittman, O.
Pacific Label & Carton Co., Seattle, Wash.
Paper Package Company, Indianapolis, Ind.
Paraffine Companies, Inc., The, San Francisco, Cal.
Randolph Box & Label Co., Chicago, Ill.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Richardson Co., The, Lockland, Cincinnati, O.
Robertson Paper Co., Montville, Conn.
Rochester Folding Box Co., The, Rochester, N. Y.
Russel & Co., H. M., Chelsea, Mass.
Schmidt Litho. Co., San Francisco, Cal.
Schmidt Litho. Co., Theo. A., Chicago, Ill.
Schultz Folding Box Co., St. Louis, Mo.
Schulz Co., Inc., A. Geo., Milwaukee, Wis.
Sefton Manufacturing Corp., Chicago, Ill.—Insert 128–129
Self-Locking Carton Corp., Chicago, Ill.
Spitzer Paper Box Co., The, Toledo, O.
Standard Paper Box Co., Detroit, Mich.
Stecher Litho. Co., Rochester, N. Y.
Stecker Paper Box Co., Detroit, Mich.
Sutherland Paper Co., Kalamazoo, Mich.
Trenton Folding Box Co., Trenton, N. J.
Unger Commercial Co., The, Cleveland, O.
Universal Paper Box Co., St. Louis, Mo.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

U. S. Printing & Lithographing Co., The, Cincinnati, O.
Van Box & Board Co., New York, N. Y.
Wagner Folding Box Co., Buffalo, N. Y.
Waldorf Paper Products Co., St. Paul, Minn.
Wayne Paper Goods Co., Fort Wayne, Ind.
Wilson Paper Box Co., Richmond, Va.
Wolverine Carton Company, Grand Rapids, Mich.
Worcester Paper Box Co., Medford, Mass.

BOXES (Mailing)

Ace Carton Corp., Chicago, Ill.
Atlantic Carton Corp., Norwich, Conn.
Brown & Bailey, Philadelphia, Pa.
Consolidated Paper Co., Monroe, Mich.—Insert 88-89
Danbury Square Box Co., The, Danbury, Conn.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92-93
Gair Co., Robert, New York, N. Y.—Insert 100-101
Gaylord, Inc., Robert, St. Louis, Mo.
Gereke-Allen Carton Co., St. Louis, Mo.
Hercules Paper Box Co., Columbus, O.
Hinde & Dauch Paper Co., The, Sandusky, O.
Illinois Carton & Label Co., Chicago, Ill.
International Printing Co., Indianapolis, Ind.
Interstate Folding Box Co., Middletown, O.
Lord Baltimore Press, Baltimore, Md.
Mason Box Co., The, Attleboro Falls, Mass.—Insert 110-111
Michigan Carton Co., Battle Creek, Mich.
Monarch Nusbaum Paper Box Co., Inc., Buffalo, N. Y.
National Folding Box Co., New Haven, Conn.
National Metal Edge Box Co., Philadelphia, Pa.
New England Box Co., The, Greenfield, Mass.
River Raisin Paper Co., Monroe, Mich.
Ritchie & Co., W. C., Chicago, Ill.
Robertson Paper Box Co., Inc., Montville, Conn.
Rochester Folding Box Co., Rochester, N. Y.
Sefton Mfg. Co., Chicago, Ill.—Insert 128-129
Schultz Co., A. Geo., Milwaukee, Wis.
Trenton Folding Box Co., Trenton, N. J.
Wayne Paper Goods Co., Fort Wayne, Ind.
Young Bros., Providence, R. I.

BOXES, MOLDED (Phenolic)

Boonton Mldg. Co., Boonton, N. J.
Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Kurz Kasch Co., Dayton, O.
Mack Molding Company, Wayne, N. J.
Northern Industrial Chemical Co., Boston, Mass.
Norton Laboratories, Inc., Lockport, N. Y.

BOXES (Paper, Set-Up)

Letters indicate general class of boxes manufactured.
A—Covering Machine-made Boxes.
B—Automatic Machine-made Boxes.
C—Hand-made Boxes.
D—Hand-made and Machine-made Boxes.
g.l.—Indicates manufacture of general line of boxes in the class specified, except certain types which are specialties or specialized in, such as Candy, Holiday, Face Powder, Perfumery, Carbon Paper, Jewelry Cases and Shelf Boxes, Hinged Lid and Display, Slide Boxes, Cigarette Boxes, Mailing Boxes and special small boxes. These are indicated by name.

American Paper Box Co., Saginaw, Mich.
A, C, and D, g.l.
Atlas Paper Box Co., Chattanooga, Tenn.
A and B, g.l.
Baxter Paper Box Co., The, Brunswick, Me.
D, face powder, perfumery, jewelry, pill and drug.
Bisler, Inc., G. A., Philadelphia, Pa.
A, B, C and D, candy and holiday.
Box Craft Co., The, Boston, Mass.
A, C and D, g.l.
Bristol Paper Box Co., Bristol, Va.
A, g.l.
Buffington Co., Providence, R. I.
A, g.l.
Burt Co., Ltd., F. N., Buffalo, N. Y.—Insert 84-85
A, B, C and D, face powder, perfumery, pill and drug, slide boxes, cigarette boxes.
Cambridge, Paper Box Co., The, Cambridge, Mass.
A, B, C, D, g.l.
Carolina Paper Box Co., The, Winston-Salem, N. C.
A and B, g.l.
Casselman, Inc., T. and E., New York, N. Y.
A, B, C and D, g.l.
Climax Paper Box Co., Cambridge, Mass.
B, C and D, g.l.
Danbury Square Box Co., The, Danbury, Conn.
A, C and D, g.l.
Davenport Paper Box Co., Cincinnati, O.
A, B, C and D, g.l.
Dennison Mfg. Co., Framingham, Mass.
D.
Des Moines Box Co., Des Moines, Ia.
A, B, C and D, g.l.
Dootlittle Co., The E. J., Meriden, Conn.
A, C and D, g.l.
Drake & Sons, Inc., H. R., Palmyra, N. Y.
A and B, g.l.
Duluth Paper Box Co., Duluth, Minn.
A, B, C and D.
Eagle Paper Box Co., Detroit, Mich.
A, C and D, g.l.
Eggers-O'Flying Co., Omaha, Neb.
A, B, C and D, g.l.
Empire Printing and Box Co., Atlanta, Ga.
A, B, C and D, g.l.
Enterprise Paper Box Co., San Francisco, Cal.
A, B, C and D, g.l.
Excelsior Paper Box Factory, St. Louis, Mo.
A, B, C and D, g.l.
Fisher Paper Box Co., Inc., Minneapolis, Minn.
A, B, C and D, g.l.
Fort Wayne Paper Box Co., Fort Wayne, Ind.
A, B, C and D, g.l.
Freeport Paper Box Co., Freeport, Ill.
A, C and D.
French & Co., A. F., Lowell, Mass.
A, B, C and D, g.l.
Grand Rapids Paper Box Co., Grand Rapids, Mich.
A, B, C and D, g.l.
Great Western Paper Box Co., St. Louis, Mo.
A, B, C and D, g.l.
Harrisburg Paper Box Co., Harrisburg, Pa.
A, B, C and D, g.l.
Hartford Box Co., The, Hartford, Conn.
A and C, g.l.
Hatch Co., C. F., Lowell, Mass.
A, B, C, D, and g.l.
Henry Co., Ira L., Watertown, Wis.
A, C, D, and g.l.
Hollywood Paper Box Corp., Hollywood, Cal.
A, B and D, g.l.
Holman Paper Box Co., St. Louis, Mo.
A, B, C and D, g.l.
Howell & Co., F. M., Elmira, N. Y.
A, B, D, and g.l.
Illinois Paper Box Co., Chicago, Ill.
A, C and D, g.l.
Jones Paper Box Co., Jesse, Philadelphia, Pa.
A, B, C and D, g.l.
Kalamazoo Paper Box Co., Kalamazoo, Mich.
A, B, C and D, g.l.
Kentucky Paper Box Co., Inc., Louisville, Ky.
A, B, C and D, g.l
Keystone Box Co., Pittsburgh, Pa.
A, B, C and D, g.l.
Killian Co., George P., Washington, D. C.
A, B, C and D, g.l.
Kroeck Paper Box Co., Chicago, Ill.
A, g.l.
Lee Paper Box Co., Philadelphia, Pa.
A, B, C and D, g.l.
Lengsfield Brothers, New Orleans, La.
A, B, C and D, g.l.
Lorschedier Schang Co., Rochester, N. Y.
A, B, C and D, g.l.
Mason Box Co., The, Attleboro Falls, Mass.—Insert 110-111
A, B, C and D, g.l.
Monarch, Nusbaum Paper Box Co., Inc., Buffalo, N.Y.
A, B, C, D and g.l.
Nashua Paper Box Co., Nashua, N. H.
A, C and D, g.l.
Neumann Co., The Robert, Cincinnati, O.
A, C and D, g.l.
Newark Paper Box Co., Newark, N. J.
A, B, C and D, g.l.
Norriwtown Box Co., Norristown, Pa.
A and B, g.l.
Ohio Boxboard Co., Cleveland, O.
A, B, C and D g.l.
Paper Package Co., Indianapolis, Ind.
A, B, C and D g.l.
Pearson Paper Box Co., Kansas City, Mo.
A, C and D, g.l.
Pharmacy Paper Box Co., Chicago, Ill.
A, B and C.
Pictorial Paper Package Co., Aurora, Ill.
A, B, C and D, g.l.
Randolph Paper Box Co., Richmond, Va.
A, B and D, g.l.
Revere Paper Box Co., Boston, Mass.
A and C, candy
Reynolds Metals Co., Louisville, Ky.—Insert 140-141
A, B, g.l.
Ritchie & Co., W. C., Chicago, Ill.
A, B, C and D, g.l., candy, holiday, face powder, perfumery, jewelry, pill and drug, slide boxes, cigarette boxes, mailing boxes, hinged lid and display, special small boxes, mailing tubes, paper cans with paper or metal ends, liquid tight round containers.
Rowell Co., Inc., E. N., Batavia, N. Y.
A, B and D, g.l.
St. Louis Paper Box Co., St. Louis, Mo.
A, B, C and D.
Schleicher Paper Box Co., F. J., St. Louis, Mo.
B, C and D, candy
Schoettle Co., Edwin J., Philadelphia, Pa.
A, B, C and D, g.l.
Schultz & Co., H., Chicago, Ill.
A, B, C and D, g.l.
Schulz Co., A. Geo., Milwaukee, Wis.
A, B, C and D, g.l.
Shoup Co., Inc., A. D., Brooklyn, N. Y.—128
B, candy, display, chewing gum, hosiery, misc.
Spitzer Paper Box Co., Toledo, O.
A, B, C and D, g.l.
Stecker Paper Box Co., Detroit, Mich.
A, B, C and D, g.l.
Trum, Inc., E. J., Brooklyn, N. Y.
A and D, g.l.
Voss Corp., Karl, Hoboken, N. J.—138
Face powder, perfumery
Yard Box Co., William F., Trenton, N. J.
A, B, C and D, g.l
York Paper Box Co., York, Pa.
A, B, C and D, g.l.

BOX MAKING MACHINES

Grammes & Sons, L. F., Allentown, Pa.
Inman Mfg. Co., Inc., Amsterdam, N. Y.
International Paper Box Machine Co., Nashua, N. H.
M. D. Knowlton Co., Rochester, N. Y.
National Packaging Machinery Co., Boston, Mass.—119-122
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70-71
Robinson Co., John T., Hyde Park, Mass.
Staude Mfg. Co., E. G., St. Paul, Minn.
Stokes & Smith Co., Philadelphia, Pa.—132-133

BOX NAILING MACHINES

Doig, Inc., Wm. S., Brooklyn, N. Y.
Grammes & Sons, Inc., L. F., Allentown, Pa.
Morgan Machine Co., Inc., Rochester, N. Y.

BOX PRINTING MACHINES

Hooper Co., F. X., Glenarm, Md.
Knowlton Co., M. D., Rochester, N. Y.
Langston Co., Samuel M., Camden, N. J.
Morgan Machine Co., Inc., Rochester, N. Y.
New Jersey Machine Corp., Hoboken, N. J.

BOX REINFORCEMENT (Strapping-Wire)

Acme Steel Co., Chicago, Ill.—68
American Steel & Wire Co., Chicago, Ill.
Gerrard Co., Inc., Chicago, Ill.
Parker Machine Works, Riverside, Cal.
Seneca Wire & Mfg. Co., Fostoria, O.
Signode Steel Strapping Co., Chicago, Ill.—130
Stanley Works, New Britain, Conn.
Tennant Sons & Co., C., New York, N. Y.

BOX SEALING MACHINES (Wire)

Acme Steel Co., Chicago, Ill.—68
Bliss Co., Inc., H. R., Niagara Falls, N. Y.—82-84
Gerrard Co., Inc., Chicago, Ill.
Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.
Morrison Co., J. L., Niagara Falls, N. Y.—Insert 116-117
New Jersey Wire Stitching Co., Camden, N. J.
Parker Machine Works, Riverside, Cal.
Signode Steel Strapping Co., Chicago, Ill.—130
Stanley Works, New Britain, Conn.
Tennant Sons & Co., C., New York, N. Y.

BOX SHOOKS (Wooden Boxes)

Acme Box Co., Chicago, Ill.
Anderson Tully Co., Memphis, Tenn.
Chicago Mill & Lumber Co., Chicago, Ill.
Dodge & Bliss Co., Jersey City, N. J.
Dunning Corp., J. H., New York, N. Y.
General Box Co., Chicago, Ill.
National Box Co., Chicago, Ill.
New England Box Co., The, Greenfield, Mass.
Owens-Illinois Glass Co., Toledo, O.
Providence Box & Lbr. Co., Providence, R. I.
Queen City Box Co., Cincinnati, O.
Rathborne, Hair & Ridgway Co., Chicago, Ill.
Richards Shook Corp., New York, N. Y.
Star Box & Lumber Co., New York, N. Y.
St. Croix Box Mfg. Co., Bayport, Minn.
St. Croix Lumber Co., Boston, Mass.
Standard Packaging Box Co., Philadelphia, Pa.
United Box Mfg. Co., Kansas City, Mo.
Weyerhaeuser Sales Co., Chicago, Ill.
Wolverine Box Co., Detroit, Mich.
Wisconsin-Michigan Lumber Co., Eagle River, Wis.
Zenith Box & Lumber Co., Duluth, Minn.

BOX SHOOKS, VENEER AND PLYWOOD

Atlas Plywood Corp., Boston, Mass.
Chicago Mill & Lumber Co., Chicago, Ill.
General Box Co., Chicago, Ill.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

National Box Co., Chicago, Ill.
New England Box Co., The, Greenfield, Mass.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Owens-Illinois Glass Co., Toledo, O.
Rathbone, Hair & Ridgway Co., Chicago, Ill.
St. Joseph Iron Works, St. Joseph, Mich.
Tifft Bros., New York, N. Y.

BOX TAPING MACHINES (Gummed)

Better Packages, Inc., Shelton, Conn.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Metal Specialties Co., Chicago, Ill.
Nashua Package Sealing Co., Nashua, N. H.
Paper Utilities Corp., Chicago, Ill.
Potdevin Machine Co., Brooklyn, N. Y.

BOX WRAPS AND DRESSINGS, PAPER BOX AND PACKAGE COVERINGS

American Lithograph Co., New York, N. Y.
American Tissue Mills, Holyoke, Mass.—Insert 76–77
Bendix Paper Co., New York, N. Y.
Bennington Wax Paper Co., Bennington, Vt.
Bradner Smith Co., Chicago, Ill.
Brooks Bank Note Co., Springfield, Mass.
Central Lithograph Co., Cleveland, O.
Collins Mfg. Co., A. M., Philadelphia, Pa.—Insert 94–95
Datz & Son, A. S., Philadelphia, Pa.
Dejonge & Co., Louis, New York, N. Y.—93
District of Columbia Mfg. Co., Washington, D. C.
Forsman Co., C. H., New York, N. Y.
Gugler Lithograph Co., Milwaukee, Wis.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—Insert 96–97
Heywood Co., Inc., R. R., New York, N. Y.
Kaumagraph Co., New York, N. Y.
Kaupp & Son, J. M., Philadelphia, Pa.
Kehlman Co., L., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.—Insert 108–109
Kirby-Cogeshall Co., Milwaukee, Wis.
Krause, Richard M., New York, N. Y.—Insert 138–139
Kupfer Bros. Co., New York, N. Y.
Lebam Papers, Chicago, Ill.
Liebs Co., L. A., New York, N. Y.
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.
McLaurin-Jones Co., Brookfield, Mass.—113
Middlesex Products Co., Boston, Mass.—117
Nashua Gummed & Coated Paper Co., Nashua, N. H.
National Art Co., New York, N. Y.
Nelson Co., Chicago, Ill.—123
N. Y. & N. E. Paper Co., Holyoke, Mass.
New England Card & Paper Co., Springfield, Mass.
Oberly & Newell Corp., New York, N. Y.
Orchard Paper Co., St. Louis, Mo.
Package Paper Co., Holyoke, Mass.—127
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Rochester Lithographing Co., Rochester, N. Y.
Rowell Co., Inc., E. N., Batavia, N. Y.
Royal Card & Paper Co., New York, N. Y.—Insert 80–81
Schmidt Litho. Co., Theo. A., Chicago, Ill.
Sweetnam, Geo. H., Cambridge, Mass.—134
Tamm & Co., New York, N. Y.
Trautman, Bailey & Blampey, New York, N. Y.—Insert 126–127
Tuttle Press Co., The, Appleton, Wis.—Insert 130–131
U. S. Printing & Lithograph Co., Cincinnati, O.
Walther & Co., Brooklyn, N. Y.
Whiting Co., Inc., C. R., Newark, N. J.—139
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 106–107
Williams & Co., Inc., Chas. W., New York, N. Y.

BUNDLE TYING MACHINES

Acme Steel Co., Chicago, Ill.—68
Bunn Co., B. H., Chicago, Ill.
Gerrard Co., Inc., Chicago, Ill.
National Bundle Tyer Co., Blissfield, Mich.
Signode Steel Strapping Co., Chicago, Ill.—130
Stanley Works, New Britain, Conn.

CADDIES
(Moisture-proof and Greaseproof Cracker)

Bliss Co., Inc., H. R., Niagara Falls, N. Y.—82–84
Consolidated Paper Co., Monroe, Mich.—Insert 88–89
Gair Co., Robert, New York, N. Y.—Insert 100–101
Gaylord Co., Robert, St. Louis, Mo.
Hummel & Downing Co., Milwaukee, Wis.
International Printing Co., Indianapolis, Ind.
River Raisin Paper Co., Monroe, Mich.
Rochester Folding Box Co., Rochester, N. Y.

CAN CAPPING MACHINES

American Can Co., New York, N. Y.—69
Anchor Cap & Closure Corp., Long Island City, N. Y.
Anderson, Inc., E. D., New York, N. Y.—74–75
Capem Machinery Corp., Buffalo, N. Y.—91
Continental Can Co., New York, N. Y.
Elgin Mfg. Co., Elgin, Ill.
Ferguson Co., J. L., Joliet, Ill.—98-100
Kiefer Machine Co., The, Karl, Cincinnati, O.—110
Knowlton Co., M. D., Rochester, N. Y.
National Packaging Machinery Co., Boston, Mass.—119–122
Phoenix-Hermetic Co., Chicago, Ill.
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers' Machinery Co., Chicago, Ill.—137
Williams Sealing Corp., Decatur, Ill.

CANS (Fibre)

American Can Co., New York, N. Y.—69
Cleveland Container Co., Cleveland, O.
Marathon Paper Mills Co., Rothschild, Wis.
Menasha Products Co., Chicago, Ill.
Molitor Box Co., Milwaukee, Wis.
Mono Service Co., Newark, N. J.
National Paper Can Co., Milwaukee, Wis.
Paper Canister Co., Philadelphia, Pa.
R. C. Can Co., St. Louis, Mo.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Ritchie & Co., W. C., Chicago, Ill.
Rowell & Co., Inc., E. N., Batavia, N. Y.
Sealright Co., Fulton, N. Y.
Sefton National Fibre Can Co., St. Louis, Mo.
Smith-Lewis Fibre Can Corp., Lowville, N. Y.
Lily-Tulip Cup Corp., New York, N. Y.

CANS (Tin, Plain and Decorated)

American Can Co., New York, N. Y.—69
Acme Can Co., Philadelphia, Pa.
Clark Mfg. Co., J. L., Rockford, Ill.
Columbia Can Co., St. Louis, Mo.
Continental Can Co., New York, N. Y.
Giles Can Co., Chicago, Ill.
Heekin Can Co., Cincinnati, O.
Metal Package Corp., New York, N. Y.—118
Phoenix-Hermetic Co., Chicago, Ill.
Robertson Steel & Iron Co., W. F., Springfield, O.
Tin Decorating Co., Baltimore, Md.
Wilkes-Barre Can Co., Wilkes-Barre, Pa.

CAPS (Bottle and Jar)

Aluminum Co. of America, Pittsburgh, Pa.
American Metal Cap Co., Brooklyn, N. Y.
Anchor Cap & Closure Corp., Long Island City, N. Y.
Aridor Co., Chicago, Ill.
Bakelite Corp., New York, N. Y.
Boonton Molding Co., Boonton, N. J.
Closure Service Co., Toledo, O.
Crown Cork & Seal Co., Inc., Baltimore, Md.
Empire Metal Cap Co., Brooklyn, N. Y.—96
General Plastics, Inc., N. Tonawanda, N. Y.—104
Gutman & Co., Ferdinand, Brooklyn, N. Y.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kurz-Kash Co., Dayton, O.
Mack Molding Co., Little Falls, N. J.
National Seal Co., Brooklyn, N. Y.
Owens-Illinois Glass Co., Toledo, O.
Phoenix-Hermetic Co., Chicago, Ill.
Sterling, A. J., New York, N. Y.
Synthetic Plastics Corp., New York, N. Y.
Tin Decorating Co., Baltimore, Md.
Vacuum Seal Co., Brooklyn, N. Y.
Williams Sealing Corp., Decatur, Ill.

CARTON LINERS

Betner Co., Ben C., Devon, Pa.
Central Waxed Paper Co., Chicago, Ill.
Coated Paper Products Co., Minerva, O.
Deerfield Glassine Co., Monroe Bridge, Mass.—Insert 90–91
Hamersley Mfg. Co., Garfield, N. J.—105
Hartford City Paper Co., Hartford City, Ind.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.—109
McDowell Paper Mills, Philadelphia, Pa.
Marathon Paper Mills, Rothschild, Wis.
Menasha Products Co., Chicago, Ill.
Midland Metal Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
National Carton Co., Joliet, Ill.
Newark Paraffine & Parchment Paper Co., Newark, N. J.
Package Paper Co., Holyoke, Mass.—127
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Rhinelander Paper Co., Rhinelander, Wis.
Specialty Paper Co., The, Dayton, O.
Sutherland Paper Co., Kalamazoo, Mich.
Warren Mfg. Co., New York, N. Y.—140
West Carrollton Parchment Co., West Carrollton, O.
Westfield River Paper Co., Russell, Mass.—142–143

CARTON MAKING MACHINES

Anderson, Inc., E. D., New York, N. Y.—74–75
Automatic Packaging Machinery Co., Nashua, N. H.—80
Cartoning Machinery Corp., Newport, R. I.—89
Ferguson Co., J. L., Joliet, Ill.—98–100
Hoepner Automatic Machine Co., Buffalo, N. Y.—91
Inman Mfg. Co., Amsterdam, N. Y.
Johnson Automatic Sealer Co., Battle Creek, Mich.—107–108
Jones, Inc., R. A., Covington, Ky.
Knowlton Co., M. D., Rochester, N. Y.
National Packaging Machinery Co., Boston, Mass.—119–122
New Jersey Machine Corp., Hoboken, N. J.
Peters Machinery Co., Chicago, Ill.—126
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington, F. B., Co., Chicago, Ill.
Staude Mfg. Co., E. G., St. Paul, Minn.
Stokes & Smith Co., Philadelphia, Pa.—132–133
Triangle Package Machinery Co., Chicago, Ill.

CARTONS (Paraffine)

Atlantic Carton Corp., Norwich, Conn.
Butler Paper Products Co., Toledo, O.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92–93
Gair Co., Robert, New York, N. Y.—Insert 100–101
Gereke Allen Co., St. Louis, Mo.
Hummel & Downing Co., Milwaukee, Wis.
Menasha Products Co., Chicago, Ill.
Michigan Carton Co., Battle Creek, Mich.
Morris Paper Mills, Chicago, Ill.
National Carton Co., Joliet, Ill.
Sutherland Paper Co., Kalamazoo, Mich.

CARTONS
(See Boxes, Folding Paper)

CARTONS (Metal-Surfaced, Metal-Lined)

Reynolds Metals Co., Louisville, Ky.—Insert 140–141

CASE LINERS

Angier Corp., Framingham, Mass.
Brown Co., Portland, Me.
Edgewater Paper Co., Menasha, Wis.
Package Paper Co., Holyoke, Mass.—127
Rexford Paper Co., Milwaukee, Wis.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141

CASES, MAILING

Mason Box Co., The, Attleboro Falls, Mass.—Insert 110–111
Cleveland Container Co., Cleveland, O.
Sefton National Fibre Can Co., St. Louis, Mo.
Young Bros., Providence, R. I.

CASTERS, TRUCK

Bassick Co., Bridgeport, Conn.
Bond Foundry & Mach. Co., Manheim, Pa.
Divine Bros., Utica, N. Y.
Fairbanks Co., New York, N. Y.
Faultless Caster Co., Evansville, Ind.
Lansing Co., Lansing, Mich.
Metzgar Co., Grand Rapids, Mich.
Nutting Truck Co., Fairbault, Minn.
Sargent & Co., New Haven, Conn.
Service Caster & Truck Co., Albion, Mich.
Warren Mfg. Co., Springfield, Mass.—140
The H. Zering Mfg. Co., Cincinnati, O.

CELLULOSE (Transparent), Printed and Plain

Catty Co., H. D., New York, N. Y.
Du Pont Cellophane Co., Inc., New York, N. Y.—94
Milwaukee Printing Co., Milwaukee, Wis.
Package Paper Co., Holyoke, Mass.—127
Shellmar Products Co., Chicago, Ill.
Sylvania Industrial Corp., New York, N. Y.—134–135
Transparent Paper Printing Co., New York, N. Y.

CELLULOID

Celluloid Corp., Newark, N. J.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

CHIPBOARD

Butterfield-Barry Co., New York, N. Y.
Consolidated Paper Co., Monroe, N. Y.—Insert 88–89
Container Corp. of America, Chicago, Ill.
Federal Paper Board Co., Inc., Bogota, N. J.
Gair Co., Robert, New York, N. Y.—Insert 100–101
Kieckhefer Container Corp., Milwaukee, Wis.
La Boiteaux Co., Cincinnati, O.
Mead Sales Co., Ltd., New York, N. Y.
Richardson Co., Lockland, O.
River Raisin Paper Co., Monroe, Mich.
Sefton Mfg. Corp., Chicago, Ill.—Insert 128–129
United Paperboard Co., New York, N. Y.
Warren Mfg. Co., New York, N. Y.—140

CONVEYORS

Alvey-Ferguson Co., Cincinnati, O.
Chain Belt Co., Milwaukee, Wis.
Colton Co., Arthur, Detroit, Mich.—90
Dodge Mfg. Co., Mishawaka, Ind.
Gifford-Wood Co., Hudson, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Keifer Machine Co., The Karl, Cincinnati, O.—110
Lamson Co., Syracuse, N. Y.
Link-Belt Co., Chicago, Ill.
Logan Co., Louisville, Ky.
Mathews Conveyor Co., Ellwood City, Pa.
Standard Conveyor Co., N. St. Paul, Minn.
U. S. Bottlers' Machinery Co., Chicago, Ill.—137
Webster Mfg. Co., Chicago, Ill.

CORKS

American Cork Co., Boston, Mass.
Armstrong Cork Co., Pittsburgh, Pa.
International Cork Co., Brooklyn, N. Y.
Owens-Illinois Glass Co., Toledo, O.

CRANES, PORTABLE

Crescent Truck Co., Lebanon, Pa.
Elwell-Parker Electric Co., The, Cleveland, O.
Mechanical Handling Systems, Inc., Detroit, Mich.
Shephard Electric Crane & Hoist Co., Montour Falls, N. Y.

CREPE WADDING

Forest Fleece Co., Boston, Mass.
International Paper Co., New York, N. Y.
Kimberly-Clark Corp., Chicago, Ill.—111
Loomis & Co., Boston, Mass.
Rochester Folding Box Co., Rochester, N. Y.

COUNTER DISPLAY

See Display Containers, Lithographers and Boxes (Folding)

COUNTING MACHINES

Durant Mfg. Co., Milwaukee, Wis.
Egry Register Co., Dayton, O.
Redington Co., F. B., Chicago, Ill.
Veeder-Root Co., Hartford, Conn.

DRUMS, FIBRE

Arvey Mfg. Co., Chicago, Ill.
Buffalo Carpenter Container Co., Inc., Buffalo, N. Y.
Carpenter Container Corp., Brooklyn, N. Y.
Champion Container Co., Philadelphia, Pa.
Container Co., The, Van Wert, O.
Emery Carpenter Container Co., Chicago, Ill.
Master Package Corp., Owen, Wis.
Philadelphia Carpenter Container Co., Inc., Philadelphia, Pa.

EMBOSSING MACHINES

American Embossing Foil Co., Providence, R. I.
Griffin & Sons, Co. H., New York, N. Y.—102–103
Peerless Roll Leaf Co., New York, N. Y.
Perkins Co., B. F., Holyoke, Mass.
U. S. Krause Corp., New York, N. Y.
Waldron Corp., John, New Brunswick, N. J.

ENVELOPES (Glassine, Cellophane, Waxed)

See Bags

ENVELOPE LININGS

See Fancy Papers

EXCELSIOR, PADS

Boston Excelsior Co., New York, N. Y.
Excelsior Wrapper Co., Chicago, Ill.
Quincy North Star Co., Quincy, Ill.
Selle & Co., H. W., Chicago, Ill.

FOIL (Tin, Lead and Composition)

Aluminum Co. of America, Pittsburgh, Pa.
Hirst Co., Adolphe, New York, N. Y.
Lehmaier & Schwartz, New York, N. Y.
Midland Metal Co., Inc., Chicago, Ill.
Pauli Corp., Karl, New York, N. Y.—Insert 136–137
Rauskolb Co., F. W., Medford, Mass.—129
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Standard Rolling Mills, Inc., Brooklyn, N. Y.
Whiting-Patterson Co., Inc., New York, N. Y.—Insert 106–107

FOLDING BOXES

See Boxes (Folding Carton)

GAUGES, PAPER

Cady Co., E. J., Chicago, Ill.
Federal Products Corp., Providence, R. I.
Foreign Paper Mills, Inc., New York, N. Y.
Perkins & Son, Inc., B. F., Holyoke, Mass.

GIFT WRAPPINGS

See Fancy Papers

GLUES AND PASTES

See Adhesives

GLUE HEATERS AND GLUE POTS

Beckwith Machine Co., Ravenna, O.
Gane Bros. & Lane, Inc., Chicago, Ill.
New Advance Machinery Co., Van Wert, O.
Potdevin Machine Co., Brooklyn, N. Y.

GLUING MACHINES FOR LABELS, ETC.

Burt Machine Co., Baltimore, Md.—85
Economic Machinery Co., Worcester, Mass.—95
Grammes & Sons, Inc., L. F., Allentown, Pa.
Knowlton Co., M. D., Rochester, N. Y.
Liquid Carbonic Corp., Chicago, Ill.—112
McDonald Engineering Corp., Brooklyn, N. Y.—114–115
National Packaging Machinery Co., Boston, Mass.—119–122
New Jersey Machine Corp., Hoboken, N. J.
Potdevin Machinery Co., Brooklyn, N. Y.
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Stokes & Smith Co., Philadelphia, Pa.—132–133
Triangle Package Machinery Co., Chicago, Ill.

GUMMED TAPE (Plain, Printed, Colored)

Badger State Paper Co., Milwaukee, Wis.
Bird & Son, E., Walpole, Mass.
Better Packages, Shelton, Conn.
Central Paper Co., Menasha, Wis.
Chicago Gummed Tape Co., Chicago, Ill.
Crowell Corp., The, Yorklyn, Del.
Edgewater Paper Co., Menasha, Wis.
Gane Bros. & Lane, Inc., Chicago, Ill.
Gummed Paper Products Co., Troy, O.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Hudson Bag Co., Brooklyn, N. Y.
Lambooy Label & Wrapper Co., Kalamazoo, Mich.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Metal Specialties Co., Chicago, Ill.
Moore & Thompson Paper Co., Bellows Falls, Vt.
McLaurin-Jones Co., Brookfield, Mass.—113
Mid-States Gummed Paper Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Paper Service Co., The, Lockland, O.
Standard Paper Co., Bellows Falls, Vt.
Tanglefoot Co., Grand Rapids, Mich.

GUMS

See Adhesives

HOISTS (Chain)

Box & Co., Inc., Alfred, Philadelphia, Pa.
Chisholm-Moore Mfg. Co., Cleveland, O.
Ford Chain Block Co., Philadelphia, Pa.
Green Co., Inc., G. S., New York, N. Y.
Harrington Co., Philadelphia, Pa.
Morris, Inc., Herbert, Buffalo, N. Y.
Roeper Crane & Hoist Works, Inc., Reading, Pa.
Seattle Chain & Mfg. Co., Seattle, Wash.
Wright Mfg. Co., Lisbon, O.
Yale & Towne Mfg. Co., Stamford, Conn.

INKS, MARKING

Binney & Smith, New York, N. Y.
Bradley Stencil Mach. Co., St. Louis, Mo.
Diagraph Stencil Mach. Corp., St. Louis, Mo.
Garvey Fountain Brush & Ink Co., St. Louis, Mo.
Marsh Stencil Machine Co., Belleville, Ill.

INSERTS, PACKAGE

See Lithographers

IRONS, BRANDING

Everhot Mfg. Co., Maywood, Ill.

JARS, GLASS

See Bottles, Glass

KRAFT PAPER (Plain, Colored, Printed)

Bogalus Paper Co., Bogalusa, La.
Brown Co., Portland, Me.
International Paper Co., New York, N. Y.
Mosinee Mills, Chicago, Ill
Tomahawk Paper Co., Chicago, Ill.

LABELS, STICKERS (Gummed)

Eastern Tin Ticket & Tag Co., Perkasie, Pa.
Edgewater Paper Co., Menasha, Wis.
Eveready Label Co., New York, N. Y.
Fenton Label Co., Philadelphia, Pa.
Foxon Co., The, Providence, R. I.—101
Gamse & Bro., Inc., H., Baltimore, Md.
Horn, John, New York, N. Y.
Howell & Co., F. M., Elmira, N. Y.
Kalamazoo Label Co., Kalamazoo, Mich.
Kirby-Cogeshall Co., Milwaukee, Wis.
Lambooy Label & Wrapper Co., Kalamazoo, Mich.
Manz Corp., Chicago, Ill.
May Co., J. L., New York, N. Y.
McLaurin-Jones Co., Brookfield, Mass.—113
Metal Specialties Mfg. Co., Chicago, Ill.
Milwaukee Label & Seal Co., Milwaukee, Wis.
Rexford Paper Co., Milwaukee, Wis.
St. Louis Sticker Co., St. Louis, Mo.
Salisbury Mfg. Co., Providence, R. I.
Shuman Co., Frank G., The, Chicago, Ill.
Stanley Co., Dayton, O.
Thomas Stationery Mfg. Co., Springfield, O.
Unger Commercial Co., The, Cleveland, O.
Unique Printed Products Co., Inc., Terre Haute, Ind.

LABELS (Embossed)

Dennison Mfg. Co., Framingham, Mass.
Foxon Co., The, Providence, R. I.—101
Horn, John, New York, N. Y.
Illinois Carton & Label Co., Chicago, Ill.
Kehlmann Co., L., New York, N. Y.
Kirby-Cogeshall Co., Milwaukee, Wis.
Krause, Richard M., New York, N. Y.—Insert 138–139
Lambooy Label & Wrapper Co., Kalamazoo, Mich.
Manz Corp., Chicago, Ill.
Muirson Label & Carton Co., Brooklyn, N. Y.
Reynolds Metals Co., Inc., Louisville, Ky.—Insert 140–141
Stanley Mfg. Co., The, Dayton, O.
Unique Printed Products Co., Inc., Terre Haute, Ind.

LABELS (Lithographed)

See Lithographers

LACE PAPER

American Lace Paper Co., Milwaukee, Wis.
Marathon Paper Mills Co., Rothschild, Wis.
Milwaukee Lace Paper Co., Milwaukee, Wis.
U. S. Lace Paper Works, Brooklyn, N. Y.

LEATHER (Imitation)

Dupont Fabrikoid Co., New York, N. Y.
Griffin & Sons Co., H., New York.—Insert 102–103
Keratol Co., The, Newark, N. J.
Whiting Co., Inc., C. R., Newark, N. J.—139

LINERS (Bag, Barrel and Box)

Arkell Safety Bag Co., New York, N. Y.
Angier, Corp., Framingham, Mass.
Bemis Bros. Bag Co., St. Louis, Mo.
Coated Paper Products Co., Minerva, O.
Container Corp. of America, Chicago, Ill.
Edgewater Paper Co., Menasha, Wis.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92–93
Paper Service Co., The, Lockland, O.
Rexford Paper Co., Milwaukee, Wis.
Reynolds Metals Co., Inc., Louisville, Ky.—Insert 140–141
River Raisin Paper Co., Monroe, Mich.
Safepack Mills, Millis, Mass.

LINERS (Waxed)

See Waxed Paper

LITHOGRAPHERS (Paper and Metal)

Acme Metal Decorating Co., Brooklyn, N. Y.
American Can Co., New York, N. Y.—69
Atlantic Litho. & Ptg. Co., New York, N. Y.
Brett Litho. Co., Long Island City, N. Y.
Brooks Bank Note Co., Springfield, Mass.

Buyers' Directory of the Packaging Industries

For information concerning equipment listed below, see catalog pages indicated by numbers appearing after advertisers' listing

Brown & Bigelow, Inc., St. Paul, Minn.
Carlisle & Co., A., San Francisco, Cal.
Columbian Offset Co., Chicago, Ill.
Columbus Bank Note, Co., Columbus, O.
Continental Can Co., New York, N. Y.
Donaldson Litho. Co., Newport, Ky.
Edwards & Deutsche Litho. Co., Chicago, Ill.
Erie Litho. & Printing Co., Erie, Pa.
Fairchild Corp., E. E., Rochester, N. Y.
Federal Litho. Co., Detroit, Mich.
Federal Litho. Co., Washington, D. C.
Forbes Litho. Mfg. Co., Boston, Mass.
Fort Pitt Litho. Co., Pittsburgh, Pa.
Genesee Valley Litho. Co., Rochester, N. Y.
Gerlach-Barklow Co., Joliet, Ill.
Goes Litho. Co., Chicago, Ill.
Gugler Lithograph Co., Milwaukee, Wis.
Henderson Litho. Co., Cincinnati, O.
Heywood Co., Inc., R. R., New York, N. Y.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Karle Litho. Co., Rochester, N. Y.
Kaumagraph Co., New York, N. Y.
Kellogg & Bulkley, Hartford, Conn.
Magill-Weinsheimer Co., Chicago, Ill.
Merchants Litho. Co., Chicago, Ill.
Metal Lithograph Co., Brooklyn, N. Y.
Meyercord Co., Chicago, Ill.
Moore Co., C. R., Pittsburgh, Pa.
Munro & Harford Co., New York City
National Prtg. & Engr. Co., Chicago, Ill.
Northwestern Litho. Co., Milwaukee, Wis.
Powers Co., W. F., New York, N. Y.
Premier Litho. Co., Chicago, Ill.
Randolph Box & Label Co., Chicago, Ill.
Regensteiner Corp., Chicago, Ill.
Reserve Litho. & Ptg. Co., Cleveland O.
Riverside Printing Co., Milwaukee, Wis.
Rochester Folding Box Co., Rochester, N. Y.
Rochester Lithographing Co., Rochester, N. Y.
Rode & Brand, Inc., New York, N. Y.
Rogers, William J., Washington, D. C.
Sale Litho. Co., Buffalo, N. Y.
Schmidt Litho. Co., Theo. A., Chicago, Ill.
Schmidt Litho. Co., San Francisco, Cal.
Schulz Litho. Co., A. C., Milwaukee, Wis.
Snyder & Black, Inc., New York, N. Y.
Standard Ptg. Co., Louisville, Ky.
Stecher Litho. Co., Rochester, N. Y.
Strobridge Litho. Co., Cincinnati, O.
Stubbs Co., The, Detroit, Mich.
Tin Decorating Co., Baltimore, Md.
Traung Label & Litho. Co., San Francisco, Cal.
Trautmann, Bailey & Blampey, New York, N. Y.—Insert 126–127
U. S. Ptg. & Litho. Co., Cincinnati, O.
Walker Litho. & Pub. Co., Boston, Mass.
Weber Litho. Co., Chicago, Ill.

MACHINES (Automatic Weighing, Dry Filling)

American Machine & Foundry Co., Brooklyn, N. Y.
Automatic Packaging Machinery Co., Nashua, N. H.—80
Anderson, Inc., E. D., New York, N. Y.—74–75
Bates Valve Bag Co., New York, N. Y.
Cartoning Machinery Corp., Newport, R. I.—89
Ferguson Co., J. L., Joliet, Ill.—98–100
Hesser Machine Co., New York, N. Y.
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—91
Johnson Automatic Sealer Co., Battle Creek, Mich.—107–108
National Packaging Machinery Co., Boston, Mass.—119–122
Peters Machinery Co., Chicago, Ill.—126
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington Co., F. B., Chicago, Ill.
Scale & Machinery, Inc., New York, N. Y.
Small Mfg. Co., C. T., St. Louis, Mo.
Stokes Machine Co., F. J., Philadelphia, Pa.—131
Stokes & Smith Co., Philadelphia, Pa.—132–133
Triangle Package Machinery Co., Chicago, Ill.

MACHINES (Bottle Capping and Sealing)

Aluminum Co. of America, Pittsburgh, Pa.
Anchor Cap & Closure Corp., Long Island City, N. Y.
American Machine & Foundry Co., Brooklyn, N. Y.
Capem Machinery Corp., Buffalo, N. Y.—91
Crown Cork & Seal Co., Baltimore, Md.
Elgin Mfg. Co., Elgin, Ill.
Horix Manufacturing Co., Pittsburgh, Pa.—106
Kiefer Machine Co., The Karl, Cincinnati, O.—110
Owens-Illinois Glass Co., Toledo, O.
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers Machinery Corp., Chicago, Ill.—137
Williams Sealing Corp., Decatur, Ill.

MACHINES (Bottle Washing)

Crown Cork & Seal Co., Baltimore, Md.
Kiefer Machine Co., The Karl, Cincinnati, O.—110
Owens-Illinois Glass Co., Toledo, O.
Stokes Machine Co., F. J., Philadelphia, Pa.—131
U. S. Bottlers' Machinery Co., Chicago, Ill.—137

MACHINES, BOX PACKING

Burt Machine Co., Baltimore, Md.—85
Knapp Corp., Fred H., Ridgewood, N. J.
Standard Sealing & Equipment Corp., Long Island City, N. Y.

MACHINES, BOX SEALING (Adhesive)

Bliss Co., Inc., H. R., Niagara Falls, N. Y.—82–84
Cartoning Machinery Corp., Newport, R. I.—89
Ferguson Co., J. L., Joliet, Ill.—98–100
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.—107–108
Jones, James H., Chicago, Ill.
Redington Co., F. B., Chicago, Ill.
Robins & Co., A. K., Baltimore, Md.
Standard Sealing & Equipment Corp., Long Island City, N. Y.
Stokes & Smith Co., Philadelphia, Pa.—132–133

MACHINES, BOX SEALING (Wire)

Acme Staple Co., Camden, N. J.
Bliss Co., Inc., H. R., Niagara Falls, N. Y.—82–84
Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.
Morrison Co., J. L., Niagara Falls, N. Y.—Insert 116–117
New Jersey Wire Stitching Co., Camden, N. J.

MACHINES (Box Strapping)

Acme Steel Co., Chicago, Ill.—68
Gerrard Co., Inc., The, Chicago, Ill.
Signode Steel Strapping Co., Chicago, Ill.—130
Stanley Works, New Britain, Conn.
Tennant & Sons, C., New York, N. Y.

MACHINES, BUNDLE TYING (Twine)

Bunn Co., B. H., Chicago, Ill.
International Paper Box Machine Co., Nashua, N. H.
National Bundle Tyer Co., Blissfield, Mich.

MACHINES (Butter, Print)

Automat Molding & Folding Co., The Toledo, O.—78–79
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington Co., F. B., Chicago, Ill.

MACHINES (Can Capping)

Aluminum Co. of America, Pittsburgh, Pa.
American Can Co., New York, N. Y.—69
Capem Machinery Corp., Buffalo, N. Y.—91
Continental Can Co., New York, N. Y.
Elgin Mfg. Co., Elgin, O.
Kiefer Machine Co., The Karl, Cincinnati, O.—110
Phoenix-Hermetic Co., Chicago, Ill.
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers' Machinery Corp., Chicago, Ill.—137
Williams Sealing Corp., Decatur, Ill.

MACHINES (Can Casing)

Burt Machine Co., Baltimore, Md.—85
Knapp Corp., Fred H., Ridgewood, N. J.
Standard Sealing & Equipment Corp., Long Island City, N. Y.

MACHINES (Can Closing and Sealing)

American Can Co., New York, N. Y.—69
Capem Machinery Corp., Buffalo, N. Y.—91
Continental Can Co., New York, N. Y.
Elgin Mfg. Co., Elgin, Ill.
Kiefer Machine Co., The Karl, Cincinnati, O.—110
National Packaging Machinery Co., Boston, Mass.—119–122
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
R. C. Can Co., St. Louis, Mo.
Small Mfg. Co., C. T., St. Louis, Mo.
U. S. Bottlers' Machinery Co., Chicago, Ill.—137
Williams Sealing Corp., Decatur, Ill.

MACHINES (Can Filling)

Bruno Mfg. Co., Buffalo, N. Y.
Colton Co., Arthur, Detroit, Mich.—90
Elgin Mfg. Co., Elgin, O.
Ferguson Co., J. L., Joliet, Ill.—98–100
Filler Machine Co., Inc., Philadelphia, Pa.—102
Horix Manufacturing Co., Pittsburgh, Pa.—106
Kiefer Machine Co., The Karl, Cincinnati, O.—110
National Acme Co., Cleveland, O.
National Packaging Machinery Co., Boston, Mass.—119–122
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Scale & Machinery, Inc., New York, N. Y.
Small Mfg. Co., C. T., New York, N. Y.
Sprague-Sells Corp., Chicago, Ill.
Stokes Machine Co., F. J., Philadelphia, Pa.—131
Stokes & Smith Co., Philadelphia, Pa.—132–133
Triangle Packaging Machinery Co., Chicago, Ill.
U. S. Bottlers' Machinery Co., Chicago, Ill.—137

MACHINES (Cartoning)

Anderson, Inc., E. D., New York, N. Y.—74–75
Automat Molding & Folding Co., The Toledo, O.—78–79
Cartoning Machinery Corp., Newport, R. I.—89
Ferguson Co., J. L., Joliet, Ill.—98–100
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—91
Inman Mfg. Co., Inc., Amsterdam, N. Y.
Johnson Automatic Sealer Co., Battle Creek, Mich.—107–108
Jones & Co., R. A., Covington, Ky.
National Packaging Machinery Co., Boston, Mass.—119–122
Peters Machinery Co., Chicago, Ill.—126
Redington Co., F. B., Chicago, Ill.
Stokes & Smith Co., Philadelphia, Pa.—132–133
Triangle Package Machinery Co., Chicago, Ill.

MACHINES (Carton Forming, Lining, Folding and Closing)

See Machines (Cartoning)

MACHINES (Collapsible Tube Filling)

Colton Co., Arthur, Detroit, Mich.—90
Kiefer Machine Co., The Karl, Cincinnati, O.—110
Stokes Machine Co., F. J., Philadelphia, Pa.—131
Wirz, Inc., A. H., Chester, Pa.—Insert 112–113

MACHINES (Corking)

Ermold Co., Edward, New York, N. Y.—97
Kiefer Machine Co., The Karl, Cincinnati, O.—110
McDonald Engineering Corp., Brooklyn, N. Y.—114–115
U. S. Bottlers' Machinery Co., Chicago, Ill.—137

MACHINES (Envelope and Bag Filling)

American Machine & Foundry Co., Brooklyn, N. Y.
Anderson, Inc., E. D., New York, N. Y.—74–75
Automatic Packaging Machinery Co., Nashua, N. H.—80
Brown Bag Filling Machine Co., The, Fitchburg, Mass.—86–87
Cartoning Machinery Corp., Newport, R. I.—89
Hoepner Automatic Machinery Co., Buffalo, N. Y.—91
National Packaging Machinery Co., Boston, Mass.—119–122
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington Co., F. B., Chicago, Ill.
Scale & Machinery, Inc., New York, N. Y.
Stokes & Smith Co., Philadelphia, Pa.—132–133
Stokes Machine Co., F. J., Philadelphia, Pa.—131
Triangle Package Machinery Co., Chicago, Ill.

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MACHINES (Labeling)

Arenco Machine Co., Inc., New York, N. Y.—77
Burt Machine Co., Baltimore, Md.—85
Economic Machinery Co., Worcester, Mass.—95
Ermold Co., Edward, New York, N. Y.—97
Knapp Corp., Fred H., Ridgewood, N. J.
McDonald Engineering Corp., Brooklyn, N. Y.—114–115
National Labeling Machinery Co., Long Island City, N. Y.
O. & J. Machine Corp., Worcester, Mass.—112
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Potdevin Machine Co., Brooklyn, N. Y.
Redington Co., F. B., Chicago, Ill.
Stokes & Smith Co., Philadelphia, Pa.—132–133

MACHINES, LINING CARTON

Anderson, Inc., E. D., New York, N. Y.—74–75
Automatic Packaging Machinery Co., Nashua, N. H.—80
Cartoning Machinery Corp., Newport, R. I.—89
Johnson Automatic Sealer Co., Battle Creek, Mich.—107–108
National Packaging Machinery Co., Boston, Mass.—119–122
Peters Machinery Co., Chicago, Ill.—126
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71

MACHINES (Liquid Filling)

American Machine and Foundry Co., Brooklyn, N. Y.
Bruno Mfg. Co., Buffalo, N. Y.
Colton Co., Arthur, Detroit, Mich.—90
Elgin Mfg. Co., Elgin, O.
Horix Mfg. Co., Pittsburgh, Pa.—106
Kiefer Machine Co., The Karl, Cincinnati, O.—110
National Acme Co., Cleveland, O.
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Stokes Machine Co., F. J., Philadelphia, Pa.—131
U. S. Bottlers' Machinery Co., Chicago, Ill.—137

MACHINES (Paper Box Forming)

Automatic Packaging Machinery Co., Nashua, N. H.—80
Johnson Automatic Sealer Co., Battle Creek, Mich.—107–108
National Folding Box Co., New Haven, Conn.
National Packaging Machinery Co., Boston, Mass.—119–122
New Jersey Machine Co., Hoboken, N. J.
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington Co., F. B., Chicago, Ill.
Robinson Co., John T., Hyde Park, Mass.
Self-Locking Machine Co., Chicago, Ill.
Stokes & Smith Co., Philadelphia, Pa.—132–133

MACHINES (Paper Can Making)

Knowlton Co., M. D., Rochester, N. Y.
Langston Co., Samuel M., Camden, N. J.
National Paper Can Co., Milwaukee, Wis.
Small Mfg. Co., C. T., St. Louis, Mo.
Staude Mfg. Co., E. G., St. Paul, Minn.

MACHINES (Roll Wrapping)

Anderson, Inc., E. D., New York, N. Y.—74–75
Package Machinery Co., Springfield, Mass.—124–125
Redington Co., F. B., Chicago, Ill.

MACHINES (Shipping Case Sealing),

Bliss Co., Inc., H. R., Niagara Falls, N. Y.—82–84
Ferguson Co., J. L., Joliet, Ill.—98–100
Jones, James H., Chicago, Ill.
Standard Sealing Equipment Corp., Long Island City, N. Y.
Veri-Best Box Sealer Co., New Holstein, Wis.

MACHINES, Semi-Liquid Filling

Filler Machine Co., Inc., Philadelphia, Pa.—102
Horix Mfg. Co., Pittsburgh, Pa.—106
Kiefer Machine Co., The Karl, Cincinnati, O.—110

MACHINES (Special Production)

Arenco Machine Co., Inc., New York, N. Y.—77
Automatic Packaging Machinery Co., Nashua, N. H.—80
Redington Co., F. B., Chicago, Ill.
Special Production Machines, Inc., Norfolk Downs, Mass.—70–71

MACHINES (Tacking)

Acme Staple Co., Camden, N. J.
Automatic Stapler Co., Chicago, Ill.
Gerrard Co., Inc., Chicago, Ill.
New Jersey Wire Stitching Machine Co., Camden, N. J.
Signode Steel Strapping Co., Chicago, Ill.—130

MACHINES (Tape Moistening)

Better Packages, Inc., Shelton, Conn.
Edgewater Paper Co., Menasha, Wis.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Hummel Co., A. C., Cincinnati, O.
McLaurin-Jones Co., Brookfield, Mass.—113
Metal Specialties Co., Chicago, Ill.
Mid-States Gummed Paper Co., Chicago, Ill.
Nashua Package Sealer Co., Inc., Nashua, N. H.
Paper Utilities Corp., Chicago, Ill.
Rexford Paper Co., Milwaukee, Wis.

MACHINES (Tight Wrapping)

Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Stokes & Smith Co., Philadelphia, Pa.—132–133

MACHINES (Vacuum Bottle Filling)

Bruno Manufacturing Co., Buffalo, N. Y.
Horix Manufacturing Co., Pittsburgh, Pa.—106
Kiefer Machine Co., The Karl, Cincinnati, O.—110
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
U. S. Bottlers' Machinery Co., Chicago, Ill.—137

MACHINES (Vending)

Consolidated Automatic Merchandising Corp., New York, N. Y.
Doehler Die Castings Co., New York, N. Y.

MACHINES, WRAPPING (Bread)

American Machine & Foundry Co., Brooklyn, N. Y.
Baker Perkins Co., Saginaw, Mich.
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—81
Sevigne Bread Wrapping Co., Nashua, N. H.

MACHINES, WRAPPING (Butter)

Automat Molding & Folding Co., The Toledo, O.—78–79
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—81
Package Machinery Co., Springfield, Mass.—124–125
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington Co., F. B., Chicago, Ill.

MACHINES, WRAPPING (Cake)

Baker Perkins Co., Saginaw, Mich.
Package Machinery Co., Springfield, Mass.—124–125

MACHINES (Wrapping Package)

American Machine & Foundry Co., Brooklyn, N. Y.
Anderson, Inc., E. D., New York, N. Y.—74–75
Automat Molding & Folding Co., The Toledo, O.—78–79
Battle Creek Wrapping Machine Co., Battle Creek, Mich.—81
Cartoning Machinery Corp., Newport, R. I.—89
Ferguson Co., J. L., Joliet, Ill.—98–100
Johnson Automatic Sealer Co., Battle Creek, Mich.—107–108
National Packaging Machinery Co., Boston, Mass.—119–122
Package Machinery Co., Springfield, Mass.—124–125
Peters Machinery Co., Chicago, Ill.—126
Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
Redington Co., F. B., Chicago, Ill.
Stokes & Smith Co., Philadelphia, Pa.—132–133

METAL DISPLAYS (Decorated)

American Can Co., New York, N. Y.—69
Continental Can Co., New York, N. Y.
Robertson Steel & Iron Co., W. F., Springfield, O.
Tin Decorating Co., Baltimore, Md.

PACKAGE DESIGN

Bendix Paper Co., New York, N. Y.
Boonton Molding Co., Boonton, N. J.
Brooks Bank Note Co., Springfield, Mass.
Burt Co., Ltd., F. N., Buffalo, N. Y.—Insert 84–85
Central Litho. Co., Cleveland, O.
Consolidated Paper Co., Monroe, Mich.—Insert 88–89
Container Corp. of America, Chicago, Ill.
Crescent Engraving Co., Kalamazoo, Mich.—92
Du Pont Cellophane Co., Inc., New York, N. Y.—94
Forsman Co., C. H., Inc., New York, N. Y.
Fort Orange Paper Co., Castleton-on-Hudson, N. Y.—Insert 92–93
Gair Co., Robert, New York, N. Y.—Insert 100–101
Gamse & Bro., Inc., H., Baltimore, Md.
Heywood Co., R. R., New York, N. Y.
Howell & Co., F. M., Elmira, N. Y.
Kaupp & Son, J. M., Philadelphia, Pa.
Mason Box Co., The, Attleboro Falls, Mass.—Insert 110–111
Monarch Nusbaum Paper Box Co., Inc., Buffalo, N. Y.
Owens-Illinois Glass Co., Toledo, O.
Package Design Corp., New York, N. Y.—141–142
Richardson Co., The, Lockland, O.
Ritchie & Co., W. C., Chicago, Ill.
Robertson Paper Box Co., Inc., Montville, Conn.
Rowell Co., Inc., E. N., Batavia, N. Y.
Schmidt Litho. Co., Theo. A., Chicago, Ill.
Schulz Co., A. Geo., Milwaukee, Wis.
Sutherland Paper Co., Kalamazoo, Mich.
Young Bros., Providence, R. I.

PACKAGE INSERTS

See Lithographers

PACKAGE WRAPS

See Box Wraps and Dressings

PACKING MATERIAL (Absorbent)

International Paper Co., New York, N. Y.
Kimberly-Clark Corp., Neenah, Wis.—111
Rochester Folding Box Co., Rochester, N. Y.

PADS (Absorbent Packing)

Kimberly-Clark Corp., Chicago, Ill.—111
International Paper Co., New York, N. Y.
Rochester Folding Box Co., Rochester, N. Y.

PAILS (Fibre)

Arvey Manufacturing Co., Chicago, Ill.
Marathon Paper Mills Co., Rothschild, Wis.
Master Package Corp., Owen, Wis.
Menasha Products Co., Chicago, Ill.
Sefton Mfg. Corp., Chicago, Ill.—Insert 128–129
Sutherland Paper Co., Kalamazoo, Mich.

PAPERS (Cheviot)

Bradner Smith & Co., Chicago, Ill.
Cranmer Co., Henry M., Boston, Mass.
Dejonge & Co., Louis, New York, N. Y.—93
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Kimberly-Clark Corp., Neenah, Wis.—111
Knowlton Bros., Watertown, N. J.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Pejepscot Paper Co., New York, N. Y.
Queen City Paper Co., Cincinnati, O.
Walther & Co., Inc., Brooklyn, N. Y.

PAPER (Embossed)

Aluminum Co. of America, Pittsburgh, Pa.
Beekman Paper & Card Co., Inc., New York, N. Y.
Bendix Paper Co., New York, N. Y.
Bradner Smith & Co., Chicago, Ill.
Coated Paper Products Co., The, Minerva, O.
Collins Mfg. Co., A. M., Philadelphia, Pa.—Insert 94–95
Cranmer Co., Henry M., Boston, Mass.
Defiance Paper Co., Niagara Falls, N. Y.
Dejonge & Co., Louis, New York, N. Y.—93
District of Columbia Paper Mfg. Co., Washington, D. C.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—Insert 96–97
Hazen Paper Co., Holyoke, Mass.—Insert 104–105
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Japan Paper Co., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.—Insert 108–109
McDowell Paper Mills, Philadelphia, Pa.
McLaurin-Jones Co., Brookfield, Mass.—113
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Middlesex Products Co., Boston, Mass.—117
Nashua Gummed & Coated Paper Co., Nashua, N. H.
New York-New England Paper Co., Holyoke, Mass.

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Pauli Corp., Karl, New York, N. Y.—Insert 136–137.
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.
Queen City Paper Co., Cincinnati, O.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Royal Card & Paper Co., New York, N. Y.—Insert 80–81
Royston Paper Co., The, Milltown, N. J.
Tamm & Co., New York, N. Y
Tuttle Press Co., The, Appleton, Wis.—Insert 130–131
Whiting Co., Inc., C. R., Newark, N. J.—139
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 106–107

PAPER (Embossed Glassine)

Deerfield Glassine Co., Monroe Bridge, Mass.—Insert 90–91
Hartford City Paper Co., Hartford City, Ind.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Package Paper Co., Holyoke, Mass.—127
Rhinelander Paper Co., Rhinelander, Wis.
Sweetnam, Inc., Geo. H., Cambridge, Mass.—134
Warren Mfg. Co., New York, N. Y.—140
Westfield River Paper Co., Inc., Russell, Mass.—Insert 142–143

PAPERS (Fancy)

Addison Lithographing Co., Rochester, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American Tissue Mills, Holyoke, Mass.—Insert 76–77
Beekman Paper & Card Co., New York, N. Y.
Bendix Paper Co., New York, N. Y.
Bennington Wax Paper Co., Bennington, Vt.
Bradner Smith & Co., Chicago, Ill.
Central Litho. Co., Cleveland, O.
Collins Mfg. Co., A. M., Philadelphia, Pa.—Insert 94–95
Cranmer Co., Henry M., Boston, Mass.
Datz & Son, A. S., Philadelphia, Pa.
Defiance Paper Co., Niagara Falls, N. Y.
Dejonge & Co., Louis, New York, N. Y.—93
District of Columbia Paper Mfg. Co., Washington, D. C.
Griffiths Paper Sales Co., Philadelphia, Pa.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—Insert 96–97
Hazen Paper Co., Holyoke, Mass.—Insert 104–105
Heywood & Co., R. R., New York, N. Y.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Japan Paper Co., New York, N. Y.
Keller-Dorian Paper Co., New York, N. Y.—Insert 108–109
Kimberly-Clark Corp., Neenah, Wis.—111
Lebam Papers, Chicago, Ill.
Lord Baltimore Press, Baltimore, Md.
McLaurin-Jones Co., Brookfield, Mass.—113
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Middlesex Products Co., Boston, Mass.—117
Nashua Gummed & Coated Paper Co., Nashua, N. H.
New England Card & Paper Co., Springfield, Mass.
New York-New Eng. Paper Co., Holyoke, Mass.
Package Paper Co., Holyoke, Mass.—127
Paper Service Co., Philadelphia, Pa.
Pauli, Corp., Karl, New York, N. Y. Insert—136–137
Pinco Papers, Inc., Camden, N. J.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Rochester Lithographing Co., Rochester, N. Y.
Royal Card & Paper Co., New York, N. Y.—Insert 80–81
Royston Paper Co., The, Milltown, N. J.
Schmidt Litho. Co., Theo. A., Chicago, Ill.
Sweetnam, Geo. H., Cambridge, Mass.—134
Tamm & Co., New York, N. Y.
Trautmann-Bailey & Blampey, New York, N. Y.—Insert 126–127
Tuttle Press Co., The, Appleton, Wis.—Insert 130–131
Walther & Co., Brooklyn, N. Y.
Whiting Co., Inc., C. R., Newark, N. J.—139
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 106–107
Williams & Co., Inc., Chas W., New York, N. Y.

PAPERS (Flint Glazed)

Bradner Smith & Co., Chicago, Ill.
Cranmer Co., Henry M., Boston, Mass.
Datz & Son, A. S., Philadelphia, Pa.
Dejonge & Co., Louis, New York, N. Y.—93
Hampden Glazed Paper & Card Co., Holyoke, Mass.—Insert 96–97
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Keller-Dorian Paper Co., New York, N. Y.—Insert 108–109
Matthias & Freeman Paper Co., Philadelphia, Pa.
Middlesex Products Co., Boston, Mass.—117
Package Paper Co., Holyoke, Mass.—127
Paper Service Co., Philadelphia, Pa.
Pinco Papers, Inc., Camden, N. J.
Queen City Paper Co., Cincinnati, O.
Walther & Co., Brooklyn, N. Y.
Whiting Co., Inc., C. R., Newark, N. J.—139
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 106–107
Williams & Co., Inc., Chas. W., New York, N. Y.

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Appleton Coated Paper Co., Appleton, Wis.
Bradner Smith & Co., Chicago, Ill.
Cranmer Co., Henry M., Boston, Mass.
Datz & Son, A. S., Philadelphia, Pa.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—Insert 96–97
Holyoke Card & Paper Co., Springfield, Mass.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.
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Nashua Gummed & Coated Paper Co., Nashua, N. H.
New England Card & Paper Co., Springfield, Mass.
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Walther & Co., Brooklyn, N. Y.
Whiting Co., Inc., C. R., Newark, N. J.—139
Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 106–107
Williams & Co., Inc. Chas. W., New York, N. Y.

PAPERS (Gelatine)

Bendix Paper Co., New York, N. Y.
Bondy-Herman Co., Chicago, Ill.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Stahl, G. A., Philadelphia, Pa.

PAPER (Glassine)

Central Waxed Paper Co., Chicago, Ill.
Deerfield Glassine Co., Monroe Bridge, Mass.—Insert 90–91
Glassine Paper Co., West Conshohocken, Pa.
Hamersley Mfg. Co., Garfield, N. J.—105
Hartford City Paper Co., Hartford City, Ind.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Package Paper Co., Holyoke, Mass.—127
Rhinelander Paper Co., Rhinelander, Wis.
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Sweetnam Inc., Geo. H., Cambridge, Mass.—134
Warren Mfg. Co., New York, N. Y.—140
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Bradner Smith & Co., Chicago, Ill.
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Warren Mfg. Co., New York, N. Y.—140
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PAPER (Gummed)

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Chicago Gummed Tape Co., Chicago, Ill.
Edgewater Paper Co., Menasha, Wis.
Gane Bros. & Lane, Inc., Chicago, Ill.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
May Co., J. L., New York, N. Y.
McLaurin-Jones, Co., Brookfield, Mass.—113
Mid-States Gummed Paper Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Peerless Paper Specialty Co., Philadelphia, Pa.
Rexford Paper Co., Milwaukee, Wis.
St. Louis Sticker Co., St. Louis, Mo.
Shuman Co., Frank G., Chicago, Ill.
Whiting-Patterson Co., Inc., New York, N. Y.—Insert 106–107

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Aluminum Co. of America, Pittsburgh, Pa.
Appleton Coated Paper Co., Appleton, Wis.
Beekman Paper & Card Co., New York, N. Y.
Bradner Smith & Co., Chicago, Ill.
Collins Mfg. Co., A. M., Philadelphia, Pa.—Insert 94–95
Dejonge & Co., Louis, New York, N. Y.—93
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McLaurin-Jones Co., Brookfield, Mass.—113
Matthias & Freeman Paper Co., Philadelphia, Pa.
New England Card & Paper Co., Springfield, Mass.
New York & New England Paper Co., Holyoke, Mass.
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Pauli Corp., Karl, New York, N. Y.—Insert 136–137
Pinco Papers, Inc., Camden, N. J.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141
Royal Card & Paper Co., New York, N. Y.—Insert 80–81
Tamm & Co., New York, N. Y.
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Blackstone Glazed Paper Co., Pawtucket, R. I.
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Bennington Wax Paper Co., Bennington, Vt.
Bradner Smith & Co., Chicago, Ill.
Central Lithograph Co., Cleveland, O.
Coated Paper Products Co., The, Minerva, O.
Collins Mfg. Co., A. M., Philadelphia, Pa.—Insert 94–95
Cranmer Co., Henry M., Boston, Mass.

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Datz & Co., A. S., Philadelphia, Pa.
Defiance Paper Co., Niagara Falls, N. Y.
Dejonge & Co., Louis, New York, N. Y.—93
District of Columbia Paper Mfg. Co., Washington, D. C.
Griffiths Paper Sales Co., Philadelphia, Pa.
Hampden Glazed Paper & Card Co., Holyoke, Mass.—Insert 96–97
Hazen Paper Co., Holyoke, Mass.—Insert 104–105
Heywood & Co., R. R., New York, N. Y.
Holyoke Card & Paper Co., Springfield, Mass.
Holyoke Paper Corp., New York, N. Y.—Insert 118–119
Japan Paper Co., New York, N. Y.
Keller-Dorian Paper Co.—Insert 108–109
Lord Baltimore Press, Baltimore, Md.
Marvellum Co., Holyoke, Mass.
Matthias & Freeman Paper Co., Philadelphia, Pa.
Metal Specialties Mfg. Co., Chicago, Ill.
Middlesex Products Co., Boston, Mass.—117
Nashua Gummed & Coated Paper Co., Nashua, N. H.
New York-New England Paper Co., Holyoke, Mass.
Package Paper Co., Holyoke, Mass.—127
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Whiting-Patterson Co., Inc., Philadelphia, Pa.—Insert 106–107
Williams & Co., Inc., Chas. W., New York, N. Y.

PAPER (Transparent Cellulose)

Du Pont Cellophane Co., Inc., New York, N. Y.—94
Sylvania Industrial Corp., New York, N. Y.—134–135

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Bennington Wax Paper Co., Bennington, Vt.
Bradner Smith & Co., Chicago, Ill.
Central Waxed Paper Co., Chicago, Ill.
Coated Paper Products Co., The, Minerva, O.
Continental Paper & Bag Corp., New York, N. Y.
Hamersley Mfg. Co., Garfield, N. J.—105
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Menasha Products Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Newark Paraffine & Parchment Paper Co., Newark, N. J.
Ohio Wax Paper Co., Columbus, O.
Otsego Waxed Paper Co., Otsego, Mich.
Package Paper Co., Holyoke, Mass.—127
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Shamut Waxed Paper Co., Holliston, Mass.
Specialty Papers Co., Toledo, O.
Sweetnam, Inc., Geo. H., Cambridge, Mass.—134
Warren Manufacturing Co., New York, N. Y.—140
West Carrollton Parchment Co., West Carrollton, O.

PAPER (Wrapping)

Bradner Smith & Co., Chicago, Ill.
Brown Co., Portland, Me.
Continental Paper & Bag Corp., New York, N. Y.
Defiance Paper Co., Niagara Falls, N. Y.
Edgewater Paper Co., Menasha, Wis.
International Paper Co., New York, N. Y.
Japan Paper Co., New York, N. Y.
Mosinee Mills, Chicago, Ill.
Orono Pulp & Paper Co., Bangor, Me.
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Hamilton Autographic Register Co., The, Hamilton, O.
Standard Register Co., Dayton, O.
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American Embossing Foil Co., Providence, R. I.
Coughlin Manufacturing Co., New York, N. Y.
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Peerless Roll Leaf Co., Inc., New York, N. Y.
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ROPE AND TWINE

American Manufacturing Co., Brooklyn, N. Y.
Ames Harris Neville Co., San Francisco, Cal.
Chelsea Fibre Mills, Brooklyn, N. Y.
Columbian Rope Co., Rome, N. Y.
Mengden & Sons Co., Chicago, Ill.

SCALES (Automatic Check Weighers)

Elder & Robinson Co., Chicago, Ill.
Exact Weight Scale Co., Columbus, O.
Jacobs Bros. Co., Brooklyn, N. Y.
Merrick Scale Mfg. Co., Passaic, N. J.—116
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SCALES (Automatic Weighing, Filling)

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National Packaging Machinery Co., Boston, Mass.—119–122
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Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.—70–71
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Toledo Scale Co., Toledo, O.
Triangle Package Machinery Co., Chicago, Ill.
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SCALES (Freight, Express)

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American Scale Co., Kansas City, Mo.
Beckman Bros., Des Moines, Iowa
Brunner Foundry & Mchy. Co., Peru, Ill.
Buffalo Scale Mfg. Co., Inc., Buffalo, N. Y.
Chicago Scale Co., Chicago, Ill.
Dayton Scale Co., Dayton, O.
Fairbanks-Morse Co., Chicago, Ill.
Fairbanks Co., New York, N. Y.
General Automatic Scale Co., St. Louis, Mo.
Howe Scale Co., Rutland, Vt.
International Business Machines Corp., New York, N. Y.
Jacobs Bros. Co., Brooklyn, N. Y.
National Scale Corp., Chicopee Falls, Mass.
Exact Weight Scale Co., Columbus, O.
Standard Scale & Supply Co., Pittsburgh, Pa.
Toledo Scale Co., Toledo, O.
Triner Sales Co., Chicago, Ill.

SCALES (Net Weighers)

American Machine & Foundry Co., Brooklyn, N. Y.
Ferguson Co., J. L., Joliet, Ill.—98–100
Hoepner Automatic Machinery Corp., Buffalo, N. Y.—91
Johnson Automatic Sealer Co., Battle Creek, Mich.—107–108
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Frohman Chemical Co., Sandusky, O.
Grasselli Chemical Co., The, Cleveland, O.
Jones, James H., Chicago, Ill.
Mechling Bros. Chemical Co., Camden, N. J.
National Adhesives Corp., New York, N. Y.
Philadelphia Quartz Co., Philadelphia, Pa.
River Raisin Paper Co., Monroe, Mich.
Standard Silicate Co., Cincinnati, O.

SPECIAL ROLL LEAF STAMPING EQUIPMENT

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Peerless Roll Leaf Co., New York, N. Y.

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Art Tube Co., Irvington, N. J.
Bridgeport Metal Goods Mfg. Co., Bridgeport, Conn.
Imperial Metal Mfg. Corp., Long Island City, N. Y.
R. C. Can Co., St. Louis, Mo.
Sun Tube Corp., Hillside, N. J.
White Metal Mfg. Co., Hoboken, N. J.
Wirz, Inc., A. H., Chester, Pa.—Insert 112–113

STENCIL BOARD AND BRUSHES (Cutting Machines)

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Bradley Stencil Machine Co., St. Louis, Mo.
Burhop Paper Co., Chicago, Ill.
Diagraph Stencil Machine Corp., St. Louis, Mo.
Cross-Glave Co., Inc., Syracuse, N. Y.
Garvey Fountain & Ink Co., St. Louis, Mo.
Gibson Co., Inc., A. C., Buffalo, N. Y.
Ideal Stencil Machine Co., Belleville, Ill.
Marsh Stencil Machine Co., Belleville, Ill.
Shaw Co., The E. C., Cincinnati, O.
Wisconsin Paper & Products Co., Milwaukee, Wis.

STRAPPING (Box)

Acme Steel Co., Chicago, Ill.—68
Gerrard Co., Inc., Chicago, Ill.
Signode Steel Strapping Co., Chicago, Ill.—130
Stanley Works, New Britain, Conn.
Tennant & Sons, C. W., New York, N. Y.

TARPAULINS, WATERPROOFED

Ames Harris Neville Co., San Francisco, Cal.
Astrup Co., Cleveland, O.
Atlanta Tent & Awning Co., Atlanta, Ga.
Boyle & Co., Inc., John, Brooklyn, N. Y.
Brooklyn Bag Mfg. Co., Brooklyn, N. Y.
Buckeye Tent & Awning Mfg. Co., Columbus, O.
Carpenter & Co., Chicago, Ill.
Channon Co., H., Chicago, Ill.
Clifton Mfg. Co., Waco, Tex.
Donnelly, Son & Putnam, New York, N. Y.
Fulton Bag & Cotton Mills, Brooklyn, N. Y.
Hetterick Mfg. Co., Toledo, O.
Pittsburgh Waterproof Co., Pittsburgh, Pa.

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Reach Textile Co., A. L., New York, N. Y.
Safepack Mills, Millis, Mass.
Upson-Walton Co., Cleveland, O.

TACKING MACHINES

Acme Staple Co., Camden, N. J.
Automatic Stapler Co., Chicago, Ill.
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Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.
New Jersey Wire Stitching Machine Co., Camden, N. J.

TAGS (Shipping, Merchandise)

Danbury Square Box Co., The, Danbury, Conn.
International Tag Co., Chicago, Ill.
May Co., The J. L., New York, N. Y.
Milwaukee Printing Co., Milwaukee, Wis.
Trenton Folding Box Co., Trenton, N. J.

TAPE (Cloth Gummed)

Chicago Gummed Tape Co., Chicago, Ill.
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Better Packages, Inc., Sheldon, Conn.
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Hummel Co., A. C., Cincinnati, O.
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Metal Specialties Co., Chicago, Ill.
Nashua Package Sealer Co., Nashua, N. H.
Paper Utilities Corp., Chicago, Ill.
Rexford Paper Co., Milwaukee, Wis.

TESTERS (Paper and Board)

Cady & Co., E. J., Chicago, Ill.
Perkins & Son, Inc., B. F., Holyoke, Mass.

TIERING MACHINES

Barrett-Cravens Co., Chicago, Ill.
Crescent Truck Co., Lebanon, Pa.
Economy Eng. Co., Chicago, Ill.
Elwell-Parker Electric Co., The, Cleveland, O.
Gifford-Wood Co., Hudson, N. Y.
Hebard & Co., W. F., Chicago, Ill.
Lewis-Shephard Co., Boston, Mass.
Revolvator Co., Jersey City, N. J.

TIN FOIL

Lehmaier & Schwartz, New York, N. Y.
Midland Metal Co., Chicago, Ill.
Reynolds Metals Co., Louisville, Ky.—Insert 140–141

TRACTORS, INDUSTRIAL (Electric)

Atlas Car & Mfg. Co., Cleveland, O.
Automatic Transportation Co., Buffalo, N. Y.
Baker-Raulang Co., Cleveland, O.
Barret-Cravens Co., Chicago, Ill.
Crescent Truck Co., Lebanon, Pa.
Elwell-Parker Electric Co., The, Cleveland, O.
Hebard & Co., W. F., Chicago, Ill.
Lakewood Eng. Co., Cleveland, O.
Mercury Mfg. Co., Chicago, Ill.
Steubing-Cowan Co., Cincinnati, O.
Wright-Hibbard Industrial Electric Truck Co., Phelps, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.

TRUCKS (Hand Lift)

Barrett-Cravens Co., Chicago, Ill.
Lewis-Shephard Co., Boston, Mass.
Plimpton Lift Truck Corp., Stamford, Conn.
Revolvator Co., Jersey City, N. J.
Steubing-Cowan Co., Cincinnati, O.

TUBES (Collapsible)

Aluminum Co. of America, Pittsburgh, Pa.
Art Tube Co., Irvington, N. J.
Atlantic Mfg. Co., Newark, N. J.
Bond Mfg. Corp., Wilmington, Del.
Continental Can Co., Inc., New York, N. Y.
New England Collapsible Tube Co., New York, N. Y.
Peerless Tube Co., Bloomfield, N. J.
Pennsylvania Collapsible Tube Co., Williamsport, Pa.
Standard Specialty & Tube Co., New Brighton, Pa.
Sun Tube Corp., Hillside, N. J.
Victor Metal Products Corp., Brooklyn, N. Y.
Wheeling Stamping Co., Wheeling, W. Va.
White Metal Mfg. Co., Hoboken, N. J.
Wirz Co., Inc., A. H., Chester, Pa.—Insert 112–113

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Champion Container Co., Inc., Philadelphia, Pa.
Cleveland Container Co., The, Cleveland, Ohio
Mason Box Co., The, Attleboro Falls, Mass.—Insert 110–111
National Paper Can Co., Milwaukee, Wis.
R. C. Can Company, St. Louis, Mo.
Ritchie & Co., W. C., Chicago, Ill.
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WIRE (Reinforcement)

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Jones, James H., Chicago, Ill.
Latham Machinery Co., Chicago, Ill.
New Jersey Wire Stitching Machine Co., Camden, N. J.
Prentiss Co., Geo. H., Holyoke' Mass.

WRAPPERS, BOTTLE (Corrugated)

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Gair Co., Robert, New York, N. Y.—Insert 100–101
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Menasha Products Co., Chicago, Ill.
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Ohio Wax Paper Co., Columbus, O.
Otsego Waxed Paper Co., Otsego, Mich.
Package Paper Co., Holyoke, Mass.—127
Paterson Parchment Paper Co., Passaic, N. J.
Robertson Paper Co., Inc., Bellow Falls, Mass.
Shamut Waxed Paper Co., Holliston, Mass.
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